

=> file bioscience

FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED  
COST IN U.S. DOLLARS

FULL ESTIMATED COST

SINCE FILE	TOTAL
ENTRY	SESSION
0.21	0.48

FILE 'ADISCTI' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Adis Data Information BV

FILE 'ADISINSIGHT' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Adis Data Information BV

FILE 'ADISNEWS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Adis Data Information BV

FILE 'AGRICOLA' ENTERED AT 12:57:21 ON 07 JUL 2005

FILE 'ANABSTR' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (c) 2005 THE ROYAL SOCIETY OF CHEMISTRY (RSC)

FILE 'ANTE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'AQUALINE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'AQUASCI' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT 2005 FAO (On behalf of the ASFA Advisory Board). All rights reserved.

FILE 'BIOBUSINESS' ENTERED AT 12:57:21 ON 07 JUL 2005  
Copyright (c) 1998 The Thomson Corporation.

FILE 'BIOCOMMERCE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 BioCommerce Data Ltd. Richmond Surrey, United Kingdom. All rights reserved

FILE 'BIOENG' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'BIOSIS' ENTERED AT 12:57:21 ON 07 JUL 2005  
Copyright (c) 2005 The Thomson Corporation

FILE 'BIOTECHABS' ACCESS NOT AUTHORIZED

FILE 'BIOTECHDS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'BIOTECHNO' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'CABA' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 CAB INTERNATIONAL (CABI)

FILE 'CANCERLIT' ENTERED AT 12:57:21 ON 07 JUL 2005

FILE 'CAPLUS' ENTERED AT 12:57:21 ON 07 JUL 2005  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'CEABA-VTB' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (c) 2005 DECHEMA eV

FILE 'CEN' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2001 American Chemical Society (ACS)

FILE 'CIN' ENTERED AT 12:57:21 ON 07 JUL 2005  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2005 American Chemical Society (ACS)

FILE 'CONFSCI' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'CROPB' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'CROPU' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'DDFB' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'DDFU' ACCESS NOT AUTHORIZED

FILE 'DGENE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'DISSABS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'DRUGB' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'DRUGMONOG2' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 IMSWORLD Publications Ltd

FILE 'DRUGU' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'EMBAL' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Elsevier Inc. All rights reserved.

FILE 'EMBASE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Elsevier Inc. All rights reserved.

FILE 'ESBIOBASE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'FEDRIP' ENTERED AT 12:57:21 ON 07 JUL 2005

FILE 'FOMAD' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Leatherhead Food Research Association

FILE 'FOREGE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Leatherhead Food Research Association

FILE 'FROSTI' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Leatherhead Food Research Association

FILE 'FSTA' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 International Food Information Service

FILE 'GENBANK' ENTERED AT 12:57:21 ON 07 JUL 2005

FILE 'HEALSAFE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'IFIPAT' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 IFI CLAIMS(R) Patent Services (IFI)

FILE 'IMSDRUGNEWS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 IMSWORLD Publications Ltd

FILE 'IMSPRODUCT' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 IMSWORLD Publications Ltd

FILE 'IMSRESEARCH' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 IMSWORLD Publications Ltd

FILE 'JICST-EPLUS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Japan Science and Technology Agency (JST)

FILE 'KOSMET' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 International Federation of the Societies of Cosmetics Chemists

FILE 'LIFESCI' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'MEDLINE' ENTERED AT 12:57:21 ON 07 JUL 2005

FILE 'NIOSHTIC' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 U.S. Secretary of Commerce on Behalf of the U.S. Government

FILE 'NTIS' ENTERED AT 12:57:21 ON 07 JUL 2005  
Compiled and distributed by the NTIS, U.S. Department of Commerce.  
It contains copyrighted material.  
All rights reserved. (2005)

FILE 'NUTRACEUT' ENTERED AT 12:57:21 ON 07 JUL 2005  
Copyright 2005 (c) MARKETLETTER Publications Ltd. All rights reserved.

FILE 'OCEAN' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'PASCAL' ENTERED AT 12:57:21 ON 07 JUL 2005  
Any reproduction or dissemination in part or in full,  
by means of any process and on any support whatsoever  
is prohibited without the prior written agreement of INIST-CNRS.  
COPYRIGHT (C) 2005 INIST-CNRS. All rights reserved.

FILE 'PCTGEN' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 WIPO

FILE 'PHAR' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 T&F Informa UK Ltd.

FILE 'PHARMAML' ENTERED AT 12:57:21 ON 07 JUL 2005  
Copyright 2005 (c) MARKETLETTER Publications Ltd. All rights reserved.

FILE 'PHIC' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 T&F Informa UK Ltd.

FILE 'PHIN' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 T&F Informa UK Ltd.

FILE 'PROMT' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Gale Group. All rights reserved.

FILE 'PROUSDDR' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Prous Science

FILE 'PS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Thieme on STN

FILE 'RDISCLOSURE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Kenneth Mason Publications Ltd.

FILE 'SCISEARCH' ENTERED AT 12:57:21 ON 07 JUL 2005  
Copyright (c) 2005 The Thomson Corporation

FILE 'SYNTHLINE' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Prous Science

FILE 'TOXCENTER' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 ACS

FILE 'USPATFULL' ENTERED AT 12:57:21 ON 07 JUL 2005  
CA INDEXING COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'USPAT2' ENTERED AT 12:57:21 ON 07 JUL 2005  
CA INDEXING COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'VETB' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'VETU' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'WATER' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)

FILE 'WPIDS' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'WPIFV' ENTERED AT 12:57:21 ON 07 JUL 2005  
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'WPINDEX' ACCESS NOT AUTHORIZED

```
=> s usherin
    49 FILES SEARCHED...
L1      208 USHERIN
```

```
=> dup rem
ENTER L# LIST OR (END):l1
DUPLICATE IS NOT AVAILABLE IN 'ADISINSIGHT, ADISNEWS, BIOCOMMERCE, DGENE,
DRUGMONOG2, FEDRIP, FOREGE, GENBANK, IMSPRODUCT, IMSRESEARCH, KOSMET,
NUTRACEUT, PCTGEN, PHAR, PHARMAML, PROUSDDR, PS, RDISCLOSURE, SYNTHLINE'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L1
L2      138 DUP REM L1 (70 DUPLICATES REMOVED)
```

```
=> s l2 and ("ush2a" or "ush 2a" or "ush2 a" or "ush-2a")
    14 FILES SEARCHED...
    32 FILES SEARCHED...
    47 FILES SEARCHED...
    65 FILES SEARCHED...
```

L3 24 L2 AND ("USH2A" OR "USH 2A" OR "USH2 A" OR "USH-2A")

L3 ANSWER 1 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2004:307918 BIOSIS  
DN PREV200400305710  
TI Genetic analysis of 2299delG and C759F mutations (**USH2A**) in  
patients with visual and/or auditory impairments.  
AU Aller, Elena; Najera, Carmen [Reprint Author]; Millan, Jose M.; Oltra,  
Juan S.; Perez-Garrigues, Herminio; Vilela, Concepcion; Navea, Amparo;  
Beneyto, Magdalena  
CS Fac Ciencias BiolDept Genet, Univ Valencia, Dr Moliner 50, E-46100,  
Valencia, Spain  
Carmen.Najera@uv.es  
SO European Journal of Human Genetics, (May 2004) Vol. 12, No. 5, pp.  
407-410. print.  
ISSN: 1018-4813.  
DT Article  
LA English  
ED Entered STN: 7 Jul 2004  
Last Updated on STN: 7 Jul 2004

L3 ANSWER 2 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2003:387003 BIOSIS  
DN PREV200300387003  
TI The molecular genetics of Usher syndrome.  
AU Ahmed, Z. M.; Riazuddin, S.; Wilcox, E. R. [Reprint Author]  
CS Laboratory of Molecular Genetics, Section on Human Genetics, NIDCD, NIH, 5  
Research Court, 2A-19, Rockville, MD, 20850-3227, USA  
wilcox@nidcd.nih.gov  
SO Clinical Genetics, (June 2003) Vol. 63, No. 6, pp. 431-444. print.  
ISSN: 0009-9163 (ISSN print).  
DT Article  
General Review; (Literature Review)  
LA English  
ED Entered STN: 20 Aug 2003  
Last Updated on STN: 20 Aug 2003

L3 ANSWER 3 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2003:28147 BIOSIS  
DN PREV200300028147  
TI **Usherin** expression is highly conserved in mouse and human  
tissues.  
AU Pearsall, Nicole [Reprint Author]; Bhattacharya, Gautam; Wisecarver, Jim;  
Adams, Joe; Cosgrove, Dominic; Kimberling, William  
CS Boys Town National Research Hospital, 555 No. 30th St., Omaha, NE, USA  
kimber@boystown.org  
SO Hearing Research, (December 2002) Vol. 174, No. 1-2, pp. 55-63. print.  
ISSN: 0378-5955 (ISSN print).  
DT Article  
LA English  
ED Entered STN: 1 Jan 2003  
Last Updated on STN: 1 Jan 2003

L3 ANSWER 4 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2002:23328 BIOSIS  
DN PREV200200023328  
TI Distribution of **usherin** in humans and its effects on  
reproduction in people with usher syndrome type II.  
AU Pearsall, N. A. [Reprint author]; Bhattacharya, G. [Reprint author];  
Cosgrove, D. [Reprint author]; Wisecarver, J. L.; Kimberling, W. J.  
[Reprint author]  
CS Genetics Department, Boys Town National Research Hospital, Omaha, NE, USA

SO American Journal of Human Genetics, (October, 2001) Vol. 69, No. 4  
Supplement, pp. 651. print.  
Meeting Info.: 51st Annual Meeting of the American Society of Human  
Genetics. San Diego, California, USA. October 12-16, 2001.  
CODEN: AJHGAG. ISSN: 0002-9297.

DT Conference; (Meeting)  
Conference; Abstract; (Meeting Abstract)  
Conference; (Meeting Poster)

LA English

ED Entered STN: 26 Dec 2001  
Last Updated on STN: 25 Feb 2002

L3 ANSWER 5 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2001:348191 BIOSIS  
DN PREV200100348191  
TI **Usherin** mutations associated with phenotypic variation in Usher  
syndrome type IIa and retinitis pigmentosa patients.

AU Orten, D. J. [Reprint author]; Zeigler, T. [Reprint author]; Weston, M. D.  
[Reprint author]; Carney, C. A. [Reprint author]; Kimberling, W. J.  
[Reprint author]

CS Boys Town National Research Hospital, Omaha, NE, USA

SO IOVS, (March 15, 2001) Vol. 42, No. 4, pp. S644. print.  
Meeting Info.: Annual Meeting of the Association for Research in Vision  
and Ophthalmology. Fort Lauderdale, Florida, USA. April 29-May 04, 2001.  
Association for Research in Vision and Ophthalmology.

DT Conference; (Meeting)  
Conference; Abstract; (Meeting Abstract)

LA English

ED Entered STN: 25 Jul 2001  
Last Updated on STN: 19 Feb 2002

L3 ANSWER 6 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2001:306545 BIOSIS  
DN PREV200100306545  
TI Spectrum of mutations in **USH2A** in British patients with Usher  
syndrome type II.

AU Leroy, Bart P. [Reprint author]; Aragon-Martin, Jose A.; Weston, Michael  
D.; Bessant, David A. R.; Willis, Catherine; Webster, Andrew R.; Bird,  
Alan C.; Kimberling, William J.; Payne, Annette M.; Bhattacharya, Shomi S.

CS Department of Molecular Genetics, Institute of Ophthalmology, 11-43 Bath  
Street, London, EC1V 9EL, UK  
bart.leroy@rug.ac.be

SO Experimental Eye Research, (May, 2001) Vol. 72, No. 5, pp. 503-509. print.  
CODEN: EXERA6. ISSN: 0014-4835.

DT Article

LA English

ED Entered STN: 27 Jun 2001  
Last Updated on STN: 19 Feb 2002

L3 ANSWER 7 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
AN 2000:252758 BIOSIS  
DN PREV200000252758  
TI Genomic structure and identification of novel mutations in **Usherin**  
, the gene responsible for Usher syndrome type IIa.

AU Weston, M. D.; Eudy, J. D.; Fujita, S.; Yao, S.-F.; Usami, S.; Cremers,  
C.; Greenburg, J.; Ramesar, R.; Martini, A.; Moller, C.; Smith, R. J.;  
Sumegi, J.; Kimberling, William J. [Reprint author]

CS Boys Town National Research Hospital, 555 North 30th Street, Omaha, NE,  
68131, USA

SO American Journal of Human Genetics, (April, 2000) Vol. 66, No. 4, pp.  
1199-1210. print.  
CODEN: AJHGAG. ISSN: 0002-9297.

DT Article

LA English  
ED Entered STN: 21 Jun 2000  
Last Updated on STN: 5 Jan 2002

L3 ANSWER 8 OF 24 CANCERLIT on STN  
AN 2002168523 CANCERLIT  
DN 22106108 PubMed ID: 12112664  
TI Mutations in myosin VIIA (MYO7A) and **usherin** (USH2A)  
in Spanish patients with Usher syndrome types I and II, respectively.  
AU Najera Carmen; Beneyto Magdalena; Blanca Jose; Aller Elena; Fontcuberta  
Ana; Millan Jose Maria; Ayuso Carmen  
CS Departamento de Genetica, Facultad de Ciencias Biologicas, Universidad de  
Valencia, Valencia, Spain.. Carmen.Najera@uv.es  
SO HUMAN MUTATION, (2002 Jul) 20 (1) 76-7.  
Journal code: 9215429. ISSN: 1098-1004.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS MEDLINE; Priority Journals  
OS MEDLINE 2002366655  
EM 200208  
ED Entered STN: 20021018  
Last Updated on STN: 20021018

L3 ANSWER 9 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 2004:699598 CAPLUS  
DN 141:329966  
TI **USH2A** mutation analysis in 70 Dutch families with Usher syndrome  
type II  
AU Pennings, Ronald J. E.; te Brinke, Heleen; Weston, Michael D.; Claassen,  
Annemarie; Orten, Dana J.; Weekamp, Henriette; van Aarem, Annelies;  
Huygen, Patrick L. M.; Deutman, August F.; Hoefsloot, Lies H.; Cremers,  
Frans P. M.; Cremers, Cor W. R. J.; Kimberling, William J.; Kremer, Hannie  
CS Department of Otorhinolaryngology, UMC Nijmegen, Nijmegen, Neth.  
SO Human Mutation (2004), 24(2), 730/1-730/8  
CODEN: HUMUE3; ISSN: 1059-7794  
PB Wiley-Liss, Inc.  
DT Journal  
LA English  
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 2004:694718 CAPLUS  
DN 141:275526  
TI Comprehensive screening of the **USH2A** gene in Usher syndrome type  
II and non-syndromic recessive retinitis pigmentosa  
AU Seyedahmadi, Babak Jian; Rivolta, Carlo; Keene, Julia A.; Berson, Eliot  
L.; Dryja, Thaddeus P.  
CS Harvard Medical School, Ocular Molecular Genetics Institute, Massachusetts  
Eye and Ear Infirmary, Boston, MA, 02114, USA  
SO Experimental Eye Research (2004), 79(2), 167-173  
CODEN: EXERA6; ISSN: 0014-4835  
PB Elsevier  
DT Journal  
LA English  
RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 11 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 2004:537880 CAPLUS  
DN 141:293912  
TI Immunohistochemistry and Reverse Transcriptase-Polymerase Chain Reaction

as Methods for Diagnostic Determination of Usher Syndrome Type IIa  
 AU Cohn, Edward; Bhattacharya, Gautam; Pearsall, Nicole; Shendrik, Igor;  
 Kimberling, William; Cosgrove, Dominic  
 CS Usher Syndrome Center, Creighton University School of Medicine, Omaha, NE,  
 USA  
 SO Laryngoscope (2004), 114(7), 1310-1314  
 CODEN: LARYA8; ISSN: 0023-852X  
 PB Lippincott Williams & Wilkins  
 DT Journal  
 LA English

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2002:603796 CAPLUS  
 DN 137:308198  
 TI Genetics of Usher-syndrome  
 AU Bolz, Hanno; Gal, Andreas  
 CS Institut fur Humangenetik des Universitätsklinikums, Hamburg-Eppendorf,  
 Germany  
 SO Medizinische Genetik (2002), 14(1), 10-14  
 CODEN: MGENEZ; ISSN: 0936-5931  
 PB Verlag Medizinischegenetik  
 DT Journal; General Review  
 LA German

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2002:576854 CAPLUS  
 DN 137:350607  
 TI Mutations in myosin VIIA (MYO7a) and **usherin** (USH2a)  
 in Spanish patients with Usher syndrome types I and II, respectively  
 AU Najera, Carmen; Beneyto, Magdalena; Blanca, Jose; Aller, Elena;  
 Fontcuberta, Ana; Millan, Jose Maria; Ayuso, Carmen  
 CS Departamento de Genetica. Facultad de Ciencias Biologicas. Universidad de  
 Valencia, Valencia, 46100, Spain  
 SO Human Mutation (2002), 20(1), 513/1-513/7  
 CODEN: HUMUE3; ISSN: 1059-7794  
 PB Wiley-Liss, Inc.  
 DT Journal  
 LA English

RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2002:556025 CAPLUS  
 DN 137:124204  
 TI **Usherin** protein, gene, antibodies and immunoconjugates for  
 diagnosis and therapy of Usher syndrome type IIa  
 IN Cosgrove, Dominic E.  
 PA Boys Town National Research Hospital, USA  
 SO U.S. Pat. Appl. Publ., 40 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002098516	A1	20020725	US 2001-970318	20011003
PRAI	US 2000-237834P	P	20001003		

L3 ANSWER 15 OF 24 DGENE COPYRIGHT 2005 The Thomson Corp on STN

AN ABG32845 Protein DGENE  
 TI Determining Usher syndrome type IIa in individual and detecting human **usherin** protein, by incubating sample with antibody immunoreactive with usher protein to produce immunoconjugate, and detecting immunoconjugate -  
 IN Cosgrove D E  
 PA (BOYS-N) BOYSTOWN NAT RES HOSPITAL.  
 PI US 2002098516 A1 20020725 40  
 AI US 2001-970318 20011003  
 PRAI US 2000-237834P 20001003  
 DT Patent  
 LA English  
 OS 2002-690477 [74]  
 CR N-PSDB: ABS52998  
 DESC Human **Usherin** protein **USH2a**.

L3 ANSWER 16 OF 24 DGENE COPYRIGHT 2005 The Thomson Corp on STN  
 AN ABG32844 Protein DGENE  
 TI Determining Usher syndrome type IIa in individual and detecting human **usherin** protein, by incubating sample with antibody immunoreactive with usher protein to produce immunoconjugate, and detecting immunoconjugate -  
 IN Cosgrove D E  
 PA (BOYS-N) BOYSTOWN NAT RES HOSPITAL.  
 PI US 2002098516 A1 20020725 40  
 AI US 2001-970318 20011003  
 PRAI US 2000-237834P 20001003  
 DT Patent  
 LA English  
 OS 2002-690477 [74]  
 DESC Human **Usherin** protein **USH2a**, immunogenic peptide #2.

L3 ANSWER 17 OF 24 DGENE COPYRIGHT 2005 The Thomson Corp on STN  
 AN ABG32843 Peptide DGENE  
 TI Determining Usher syndrome type IIa in individual and detecting human **usherin** protein, by incubating sample with antibody immunoreactive with usher protein to produce immunoconjugate, and detecting immunoconjugate -  
 IN Cosgrove D E  
 PA (BOYS-N) BOYSTOWN NAT RES HOSPITAL.  
 PI US 2002098516 A1 20020725 40  
 AI US 2001-970318 20011003  
 PRAI US 2000-237834P 20001003  
 DT Patent  
 LA English  
 OS 2002-690477 [74]  
 DESC Human **Usherin** protein **USH2a**, immunogenic peptide #1.

L3 ANSWER 18 OF 24 DGENE COPYRIGHT 2005 The Thomson Corp on STN  
 AN ABS52998 cDNA DGENE  
 TI Determining Usher syndrome type IIa in individual and detecting human **usherin** protein, by incubating sample with antibody immunoreactive with usher protein to produce immunoconjugate, and detecting immunoconjugate -  
 IN Cosgrove D E  
 PA (BOYS-N) BOYSTOWN NAT RES HOSPITAL.  
 PI US 2002098516 A1 20020725 40  
 AI US 2001-970318 20011003  
 PRAI US 2000-237834P 20001003  
 DT Patent  
 LA English  
 OS 2002-690477 [74]  
 CR P-PSDB: ABG32845

DESC Human cDNA encoding **Usherin** protein **USH2a**.

L3 ANSWER 19 OF 24 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.  
on STN  
AN 2004153358 EMBASE  
TI Mutational spectrum in Usher syndrome type II.  
AU Ouyang X.M.; Yam D.; Hejtmancik J.F.; Jacobson S.G.; Li A.R.; Du L.L.;  
Angeli S.; Kaiser M.; Balkany T.; Liu X.Z.  
CS Dr. X.Z. Liu, Department of Otolaryngology, University of Miami, 1666 NW  
12th Avenue, Miami, FL 33136, United States. xliu@med.miami.edu  
SO Clinical Genetics, (2004) Vol. 65, No. 4, pp. 288-293.  
Refs: 32  
ISSN: 0009-9163 CODEN: CLGNAY  
CY United Kingdom  
DT Journal; Article  
FS 012 Ophthalmology  
022 Human Genetics  
LA English  
SL English  
ED Entered STN: 20040422  
Last Updated on STN: 20040422

L3 ANSWER 20 OF 24 FEDRIP COPYRIGHT 2005 NTIS on STN  
AN 2005:177436 FEDRIP  
NR CRISP 5R01DC004844-03  
TI **USHERIN: STRUCTURAL AND FUNCTIONAL ANALYSIS**  
SF Principal Investigator: COSGROVE, DOMINIC E; COSGROVE@BOYSTOWN.ORG, FATHER  
FLANAGAN'S BOYS' HOME, 555 NORTH 30TH STREET, OMAHA, NE 68131  
CSP FATHER FLANAGAN'S BOYS' HOME, BOYS TOWN, NEBRASKA  
CSS Supported By: NATIONAL INSTITUTE ON DEAFNESS AND OTHER COMMUNICATION  
DISORDERS  
DB 2009 (/01/02)  
FYR 2004  
DE 2008 (/31/07)  
FU Noncompeting Continuation (Type 5)  
FS National Institutes of Health

L3 ANSWER 21 OF 24 GENBANK® COPYRIGHT 2005 on STN

LOCUS (LOC): AY481573 GenBank (R)  
GenBank ACC. NO. (GBN): AY481573  
GenBank VERSION (VER): AY481573.1 GI:44887472  
CAS REGISTRY NO. (RN): 664940-65-2  
SEQUENCE LENGTH (SQL): 18883  
MOLECULE TYPE (CI): mRNA; linear  
DIVISION CODE (CI): Primates  
DATE (DATE): 30 Mar 2004  
DEFINITION (DEF): Homo sapiens Usher syndrome 2A isoform B (**USH2A**  
) mRNA, complete cds.  
SOURCE: Homo sapiens (human)  
ORGANISM (ORGN): Homo sapiens  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata;  
Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini;  
Hominidae; Homo  
REFERENCE:  
1 (bases 1 to 18883)  
AUTHOR (AU): Van Wijk, E.; Pennings, R.J.; Te Brinke, H.; Claassen, A.;  
Yntema, H.G.; Hoefsloot, L.H.; Cremers, F.P.;  
Cremers, C.W.; Kremer, H.  
TITLE (TI): Identification of 51 Novel Exons of the Usher Syndrome  
Type 2A (**USH2A**) Gene That Encode Multiple  
Conserved Functional Domains and That Are Mutated in  
Patients with Usher Syndrome Type II  
JOURNAL (SO): Am. J. Hum. Genet., 74 (4), 738-744 (2004)

OTHER SOURCE (OS): CA 140:386911  
REFERENCE: 2 (bases 1 to 18883)  
AUTHOR (AU): van Wijk,E.; te Brinke,H.; Kremer,H.  
TITLE (TI): Direct Submission  
JOURNAL (SO): Submitted (19-NOV-2003) Otorhinolaryngology, UMC  
Nijmegen, Geert Grooteplein 10, Nijmegen 6525 GA,  
Netherlands

FEATURES (FEAT):

Feature Key	Location	Qualifier
source	1..18883	/organism="Homo sapiens" /mol-type="mRNA" /db-xref="taxon:9606" /chromosome="1" /map="1q41"
gene	1..18883	/gene="USH2A"
5'UTR	1..387	/gene="USH2A"
CDS	388..15996	/gene="USH2A" /note="usherin" /codon-start=1 /product="Usher syndrome 2A isoform B" /protein-id="AAS47698.1" /db-xref="GI:44804677" /translation="MNCVLSLGSGLFQVIEML IFAYFASISLTESRGLFPRLENVG AFKKVSIVPTQAVCGLPDRSTFCHSSAAAESIQF CTQRFQCIQDCPYRSSHPTYTALFS AGLSSCITPDKNDLHPNAHSNSASFIFGNHKSCF SSPPSPKLMASFTLAVWLKPEQQG VMCVIEKTVDGQIVFKLTISEKETMFYIRTVNGL QPPIKVMTLGRILVKKWIHLSVQV HQTKISFFINGVEKDHTPFNARTLSGSITDFASG TVQIGQSLNGLEQFVGRMQDFRLY QVALTNREILEVFSGDLLRLHAQSHCRCPGSHPR VHPLAQRYCIPNDAGDTADNRVSR LNPEAHPLSFVNDNDVGTSWVSNVFTNITQLNQG VTISVDLENGQYQVFYIIIIQFFSP QPTEIRIQRKENS LDWEDWQYFARNCGAFGMKN NGDLEKPD SVNCLQLSNFTPYSRG NVTFSILT PGPNYRPGYNNFYNTPSLQEFVKATQ IRFHFHGQYYTTETAVNLRHRYYA VDEITISGRQCQCHGHADNCDTTSQPYRCLCSQES FTEGLHCDRCLPLYNDKPFQGDQ VYAFNCKPCQCNSHSHSKCHYNI SVDPFPFEHFRG GGGVCDDEHNTTGRNCELCKDYF FRQVGADPSAIDVCKPCDCDTVGTNRNGSILCDQI GGQCNC KRHVSGRQCNCQNGFYN LQELDPDGCSPCNCNTSGTVGDG DITCHQNSGQCK CKANVIGLRCDHCNFGFKFLRSFN DVGCEPCQCNLHGSVNKFCNPHSGQCECKKEAKG LQCDTCRENFYGLDVTNCKACDCD TAGSLPGTVCNAKTGQCICKPNVEGRQCNC KLEG NFYLRQNN SFLCLPCNCDKTGTIN GSLLCNKSTGQCPCKLGV TGLRCNQCEPHRYNLT IDNFQHCQMCECDSLGLTLPGTICD PISGQCLCVPNRQGRRCNQCPGFYISPGNATGC LPCSCHTTGAVNHICNSLTGQCVC QDASIAGQRCDQCKDHYFGFDPQTGRCQPCNCHL SGALNETCHLVTGQCFCQKQFVTGS KCDACVPSASHLDVNNLLGCSKTPFQQPPPRGQV QSSSAINLSWSPDSPAHLWTYS

LLRDGFEIYTTEDQYPYSIQYFLDSDLTPYTKYS  
YYIETTNVHGSTRSVAVTYKTKPG  
VPEGNLTLSYIIPIGSDSVTLTWTTLSNQSGPIE  
KYILSCAPLAGGQPCVSYEGHETS  
ATIWNLVPPFAKYDFSVQACTSGGCLHSLPITVTT  
AQAPPQRLSPPKMQKISSTELHVE  
WSPPAELNGIIIRYELYMRRLRSTKETTSEESRV  
FQSSGWLSPHSFVESANENALKPP  
QTMTTITGLEPYTKYEFRLAVNMAGSVSSAWVS  
ERTGESAPVFMIPPSVFPLSSYSL  
NISWEKPADNVTRGKVVGYNMLSEQSPQQSIP  
MAFSQLLHTAKSQELSYTVEGLKP  
YRIYEFTITLCNSVGCVTASAGAGQ  
TLAAAPAQLRPPLVKGINSTTIHLRWFPEELN  
GPSPIYQLERRESSLPALMTTMMKGIRFIGNGYC  
KFPSSTHPVNTDFTGIKASFRTKV  
PEGLIVFAASPGNQEEYFALQLKKGRLYFLFDPQ  
GSPVEVTTTNDHGKQYSDGKWHEI  
IAIRHQAFGQITLDGIYTGSSAILNGSTVIGDNT  
GVFLGGLPRSYTILRKDPEIIQKG  
FVGCLKDVHFMKNYNPSAIWEPLDWQSSEEQINV  
YNSWEGCPASLNEGAQFLGAGFLE  
LHPYMFHGGMNFEISFKFRTDQLNGLLLFVYNKD  
GPDFLAMELKSGILTFRNLNTSLAF  
TQVDLLLGLSYCNGKWNKVIIKKEGSFISASVNG  
LMKHASESGDQPLVNSPVYVGGI  
PQELLNSYQHLCEQGGGCMKDVKFTRGAVVNL  
ASVSSGAVRVNLDGCLSTDSAVNC  
RGNDSILVYQGKEQSVYEGGLQPFTEYLYRVIAS  
HEGGSVYSDWSRGRRTGAAPQSVP  
TPSRVRSNLGYSIEVTWDEPVVRGVIEKYILKAY  
SEDSTRPPRMPASAEFVNTSNLT  
GILTGLLPFKNYAVTLTACTLAGCTESSHALNIS  
TPQEAPQEVQPPVAKSLPSSLLLS  
WNPPKKANGIITQYCLYMDGRLIYSGSEENYIVT  
DLAVFTPHQFLLSACTHVGCNTSS  
WVLLYTAQLPPEHVDSPVLTVLDSRTIHIQWKQP  
RKISGILERYVLYMSNHTHDFTIW  
SVIYNSTELFQDHMLQYVLPGNKYLIKLGACTGG  
GCTVSEASEALTDEDIPEGVPAPK  
AHSYSPDSFNVSWTEPEYPNGVITSYGLYLDGIL  
IHNSSELSYRAYGFAPWSLHSFRV  
QACTAKGCALGPLVENRTLEAPPEGTNVFVKTO  
GSRKAHVREAPFRPNGLLTHSVL  
FTGIFYVDPVGNNYTLLNVTKVMYSGEETNLWVL  
IDGLVPFTNYTVQVNISSNSQGLI  
TDPITIAMPPGAPDGVLPRLSSATPTSLQVVWS  
TPARNNAPGSPRYQLQMRSGDSTH  
GFLELFSNPSASLSYEVSDLQPYTEYMFRLVASN  
GFGSAHSSWIPFMTAEDKPGPVVP  
PILLDVKSRMMLVTWQHPRKSNGVITHYNIYLHG  
RLYLRTPGNVNCTVMHLHPYTAY  
KFQVEACTSKGCSLSPESQTVWTLPGAPEGIPSP  
ELFSDTPTSVIISWQPPHPNGLV  
ENFTIERRVKGKEEVTTLVTLPRSHSMRFIDKTS  
ALSPWTKYEYRVLMTLHGGTNS  
AWVEVTTTRSPRAGVQPPVTVLEPDAVQVTWKP  
PLIQNGDILSYEIHMPDPHITLTN  
VTSAVLSQKVTHLIPFTNYSVTIVACSGGNGYL  
GCTESLPTYVTHTPTVPQNVGPLS  
VIPLSESYVVISWQPPSKPNGPNLRYELLRRKIQ  
QPLASNPEDLNRWHNIYSGTQWL  
YEDKGLSRFTTYEYMLFVHNSVGFTPSREVTVT

LAGLPERGANLTASVL  
NHTAIDVR  
WAKPTVQDLQGEVEYYTLFWSSATSNDLSLKILPD  
VNSHVIGHLKPNTEYWIFISVFNG  
VHSINSAGLHATTCDGEPQGMLPPEVVIINSTAV  
RVIWTSPSNPNGVVTEYSIYVNNK  
LYKTGMNVPGSFILRDLSPFTIYDIQVEVCTIYA  
CVKSNGTQITTVEDTPSDIPTPTI  
RGITSRSLQIDWVSPRKPNGIILGYDLLWKTWYP  
CAKTQKLVDQSDDELCKAVRCQKP  
ESICGHICYSSEAKVCCNGVLYNPKPGHRCCEEK  
YIPFVLNSTGVCCGGRIQEAQPNH  
QCCSGYYARILPGEVCCPDEQHNRVSVGIGDSCC  
GRMPYSTSGNQICCAGRLHDGHGQ  
KCCGRQIVSNDLECCGGEVGVYNRLPGMFCCGQ  
DYVNMSDTICCSASSGESKAHIKK  
NDPVPVKCCETELIPKSQKCCNGVGYNPLKYVCS  
DKISTGMMKETKECRILCPASME  
ATEHCGRCDNFNFTSHICTVIRGSHNSTGKASIEE  
MCSSAETIHTGSVNTYSYTDVNL  
KPYMTYEURISAWNSYGRGLSKAVRARTKEDVPQ  
GVSPPTWTKIDNLEDITIVLNWRKP  
IQSNGPIIYYILLRNGIERFRGTSLSFSKKEGIQ  
PFQEYSYQLKACTVAGCATSSKV  
AATTQGVPELPPSITALSAVALHLSWSVPEKS  
NGVIKEYQIRQVGKGLIHTDITDR  
RQHTVTGLQPYTNYSFTLTACTSAGCTSSEPFLG  
QTLQAAPGVVWTPRHIIINSTTV  
ELYWSLPEKPNGLVSQYQLSRNGNLLFLGGSEEQ  
NFTDKNLEPNSRYTYKLEVKTGGG  
SSASDDYIVQTPMSTPEEIYPPYNITVIGPYSIF  
VAWI PPGILIP EIPVEYNVLLNDG  
SVTPLAFSVGHHQSTLLENLTPFTQYEIRIQACQ  
NGSCGVSSRMFVKTPAAPMDLNS  
PVLKALGSACIEIKWMPPEKPNGIINYFIYRRP  
AGIEEESVLFVWSEGALEFMDEGD  
TLRPFTLYEYRVRACNSKGSVESLWSLTQTLAP  
PQDFPAPWAQATSAHSVLLNWTKP  
ESPNGIISHYRVVYQERDDPTFNSPTVHAFTVK  
GTSHQAHLYGLEPFTTYRIGVAA  
NHAGEILSPWTLIQTLESSPSGLRNFIVEQKENG  
RALLQWSEPMRTNGVIKTYNIFS  
DGFLEYSGLNRQFLFRRLDPFTLYTLTLEACTRA  
GCAHSAPQLWTDEAPPDSQLAPT  
VHSVSTSVELSWSEPVNPNGKIIRYEVIRRCFE  
GKAWGNQTIQADEKIVFTEYNTER  
NTFMYNDTGLQPWTQCEYKIYTWNSAGHTCSSWN  
VVRTLQAPPEGLSPPVISYVSMNP  
QKLLISWIPPEQSNQIISYRLQRNEMLYPFSFD  
PVTFNITDEELLPFSTYSYALQAC  
TSGGCSTSKPTSITTLAAPSEVSPDLWAVSAT  
QMNVCWSPPTVQNGKITKYLVRD  
NKESLAGQGLCLLVSH  
LQPYSQYNFSLVACTNGGCTASVSKSAWTMEALP  
ENMDSPTL  
QVTGSEIEITWKPPRNPNQIRSYELRRDGTIV  
YTGLETRYRDFTLTPGVEYSYTVT  
ASNSQGGILSPLVKDRTPSPAPSGMEPPKLQARG  
PQEILVNWDPPVRTNGDIINYTLF  
IRELFEKETKIIHINTTHNSFGMQSYIVNQLKPF  
HRYEIRIQACTTLGCASSDWTFIQ  
TPEIAPLMQPPPHLEVQMAPGGFQPTVSLWTGP  
LQPNGKVLYYELYRRQIATQPRKS

NPVLIYNGSSTSFIDSELLPFTEYEYQVWAVNSA  
 GKAPSSWTWCRTGPAPPEGLRAPT  
 FHVISSTQAVVNISAPGKPNGIVSLYRLFSSAH  
 GAETVLSEGMATQOTLHGLQAFTN  
 YSIGVEACTCFNCCSKGPTAELRTHPAPPSGLSS  
 PQIGTLASRTASFRWSPPMFPNGV  
 IHSYELQFHVACPPDSALPCTPSQIETKYTGLGQ  
 KASLGGLQPYTTYKLRVVAHNEVG  
 STASEWISFTTQKELPQYRAPFSVDSNLSVVCVN  
 WSDTFLNGLQLKEYVLTGGRRVY  
 SGLDTTLYIPRTADKTFFFQVICTTDEGSVKTPL  
 IQYDTSTGLGLVLTTPGKKKGSRS  
 KSTEFYSELWFIVLMAMLGLILLAIFLSLILQRK  
 IHKEPYIRERPPLVPLQKRMSPLN  
 VYPGENHMGGLADTKIPRSGTPVSIRSNSACVL  
 RIPSQNQTSLTYSQGSLSHRSVSQ  
 MDIQDKKVLMDNSLWEAIMGHNSGLYVDEEDLMN  
 AIKDFSSVTKERTTFTDTHL"  
 /gene="USH2A"

3'UTR 15997..18883

SEQUENCE (SEQ):

1	tgtttgctct	gcagaatact	ttacctgggc	acccaagtct	tccttccagc	attcctgctg
61	ctacagccta	tttgctgagt	aaccaggggt	tacagcagcg	ttgccaggca	acgagggaca
121	gcggtcctgt	tgaagagcca	tttgtcacac	tgaggggact	ggttgaaatg	caataaagaa
181	atgataccag	cagctactca	tgtcttcgcc	attgctaaga	acgtcgttgg	tattacctta
241	ctctgagaac	gtgtctgcag	tttccagaaa	atggagtatc	gcaacatcac	ttaaagtacc
301	ctgcttcaaa	gtattgctgg	caagtggcgt	gggcctgatt	atttatttag	aaatgcttta
361	tcaggaggag	aatgcttttt	tgtaaacatg	aattgccag	ttctttcatt	gggctctggc
421	ttcttgtttc	aggtcattga	aatgttgatc	tttgccatt	ttgcttcaat	atccttgact
481	gagtcacgag	gtcttttccc	aaggctggag	aacgtgggag	ctttcaagaa	agtttccatc
541	gtgccaaccc	aagcagtatg	tggactccca	gaccgaagca	ctttttgtca	cagctctgct
601	gctgctgaaa	gtattcagtt	ctgtaccag	cggttttgta	ttcaggattg	cccatacaga
661	tcttcacacc	ctacctacac	tgcccttttc	tcagcaggcc	tcagtagctg	catcacacca
721	gacaagaatg	atctgcatcc	taacgcccc	agcaattctg	caagttttat	ttttggaaat
781	cacaagagct	gcttttcttc	tcctccttct	ccaaagctga	tggcatcatt	taccttagct
841	gtatggctga	aacctgagca	acaaggtgta	atgtgtgtta	tagaaaagac	agtagatggg
901	cagattgtgt	tcaaacttac	aatatctgag	aaagagacca	tgttttatta	tcgcaagta
961	aatggtttgc	aacctccaat	aaaagtaatg	acactgggga	gaattcttgt	gaagaaatgg
1021	attcatctta	gtgtgcaggt	gcatcagaca	aaaatcagct	tctttatcaa	tggcgtggag
1081	aaggatcata	cacctttcaa	tgcaagaact	ctaagtgggt	caattacaga	ttttgcatct
1141	ggtactgtgc	aaataggaca	gagtttaaat	ggttttagagc	agtttgctcg	agaatgcaa
1201	gattttcgat	tataccaagt	ggcacttaca	aacagagaga	ttctggaagt	cttctctgga
1261	gatcttctca	gattgcatgc	ccaatcacat	tgccgttgcc	ctggcagcca	cccgcgggtc
1321	cacccttttg	cacagcggta	ctgcattcct	aatgatgcag	gagacacagc	tgataataga
1381	gtgtcacggg	tgaatcctga	agccccatct	ctctcttttg	tcaatgataa	tgatgttggg
1441	acttcatggg	tttcaaagt	gtttacaaac	attacacagc	ttaatcaagg	agtgactatt
1501	tcagttgatt	tggaaaatgg	acagtatcag	gtgttttata	ttatcattca	gttctttagt
1561	ccacaaccaa	cggaaataag	gattcaaagg	aagaaggaaa	atagtttaga	ttgggaggac
1621	tggcaatatt	ttgccaggaa	ttgtggtgct	tttggaatga	aaaacaatgg	agatttggaa
1681	aaacctgatt	ctgtcaactg	tcttcagctt	tccaatttta	ctccatattc	ccgtggcaat
1741	gtcacattta	gcatcctgac	acctggacca	aattatcgtc	ctggatacaa	taacttctat
1801	aataccccat	ctcttcaaga	gttcgtaaaa	gccacgcaa	taaggtttca	ttttcatggg
1861	cagtactata	caactgagac	tgctgttaac	ctcagacaca	gatattatgc	agtggaacgaa
1921	atcaccatta	gtgggagatg	tcagtgccat	ggtcatgccg	ataactgcca	cacaacaagc
1981	cagccatata	gatgcctctg	ctcccaggag	agcttcaactg	aaggacttca	ttgtgatcgc
2041	tgcttgccct	tttataatga	caagcctttc	cgccaagggtg	atcaagttta	cgctttcaat
2101	tgtaaacctt	gtcaatgcaa	cagccatttc	aaaagctgcc	attacaacat	ctctgtagac
2161	ccatttcctt	ttgagcactt	cagaggggga	ggaggagttt	gtgatgattg	tgagcataac
2221	actacaggaa	ggaactgtga	gctgtgcaag	gattactttt	tccgacaagt	tggtgcagat
2281	ccttcggcca	tagatgtttg	caaaccctgt	gactgtgata	cagttggcac	tagaaatggg
2341	agcattcttt	gtgatcagat	tggaggacag	tgtaattgta	agagacacgt	gtctggcagg
2401	cagtgcatac	agtgccagaa	tggattctac	aatctacaag	agttggatcc	tgatggctgc
2461	agtccctgta	actgcaatac	ctctgggaca	gtggatggag	atattacctg	tcaccaaagt

2521	tcaggccagt	gcaagtgcaa	agcaaacggt	attgggctta	ggtgtgatca	ttgcaatddd
2581	ggattttaa	ttctccgaag	ctttaatgat	gttggatgtg	agccctgcca	gtgtaacctc
2641	catggctcag	tgaacaaatt	ctgcaatcct	cactctgggc	agtgtgagtg	caaaaaagaa
2701	gccaaaggac	ttcagtgtga	cacctgcaga	gaaaactddd	atgggttaga	tgtaaccaat
2761	tgtaaggcct	gtgactgtga	cacagctgga	tcctccctg	ggactgtctg	taatgctaag
2821	acagggcagt	gcatctgcaa	gcccaatggt	gaagggagac	agtgaataaa	atgtttggag
2881	ggaaacttct	acctacggca	aaataattct	ttctctgtc	tgcttgcaa	ctgtgataag
2941	aaaactgcaa	taaatggctc	tctgtgtgt	aacaaatcaa	caggacaatg	tccttgcaaa
3001	ttaggggtaa	cagggtcttcg	ctgtaatcag	tgtgagcctc	acaggtacaa	tttgaccatt
3061	gacaatddd	aacactgcca	gatgtgtgag	tgtgattcct	tggggacatt	acctgggacc
3121	attdgtgacc	caatcagtgg	ccagtgcctg	tgtgtgccta	atcgtcaagg	aagaagggtg
3181	aatcagtgtc	aaccagggtt	ttatattdct	ccaggcaatg	ccactggctg	cctgccatgc
3241	tcatgccata	caactggtgc	agttaatcac	atctgtaata	gcctgactgg	tcagtgtggt
3301	tgccaagatg	cttccattgc	tgggcaacgt	tgtgaccaat	gcaaagacca	ttactttgga
3361	tttgatcctc	agactggaag	atgtcagcct	tgtaattgtc	atctctcagg	agccttgaat
3421	gaaacctgtc	acttggtcac	aggccagtgt	ttctgtaaac	aatttgtcac	tggtctaaag
3481	tgtgatgctt	gtgttcccag	tgcaaggccac	ttggatgtca	acaatctatt	gggttgacgc
3541	aaaactccat	tccagcaacc	tccgcccaga	ggacaagttc	aaagttcttc	tgctatcaat
3601	ctctcctgga	gtccacctga	ttctccaaat	gccactggc	ttacttacag	tttactcagg
3661	gatggtdttg	aaatctacac	aacagaggat	caatacccat	acagtattca	atacttctta
3721	gacacagacc	tgttaccata	taccaaata	tcctattaca	ttgagaccac	caatgtgcat
3781	ggttcaacaa	ggagtgtagc	tgtcacttac	aagacaaaac	caggggtccc	agagggaaac
3841	ttgactttta	gttatatcat	tcctattggc	tcagactctg	tgacacttac	ctggacaaca
3901	ctctcaaatc	aatctggtcc	catagagaaa	tatattdttg	cctgtgcccc	tttggctggt
3961	ggtcagccat	gtgtttccta	cgaagggtcat	gaaacctcag	ctaccatctg	gaatctggtt
4021	ccattttgcca	agtacgattt	ttctgtacag	gcgtgtacta	gcgggggctg	tttacacagc
4081	ttgcccatta	cagtgaccac	agcccaggcc	cctcccaaaa	gactaagtcc	acctaaagt
4141	cagaaaatca	gttctacaga	acttcagtga	gaatggtctc	caccagcgga	actaaatgga
4201	ataattataa	gatatgaact	atacatgaga	agactgagat	ctactaaaga	aaccacatct
4261	gaggaaaagtc	gagtdttttca	gagcagtggg	tggtctagtc	ctcattcatt	tgtagaatcg
4321	gccaatgaaa	atgcattaaa	acctcctcaa	acaatgacaa	ccatcactgg	cttgaggcca
4381	tacaccaagt	atgagttcag	agtcttagct	gtgaatatgg	ctggaagtgt	gtcttctgcc
4441	tgggtctcag	aaagaacggg	agaatcagca	cctgtattca	tgatccctcc	ttcagtdttt
4501	cccctctctt	cgtactctct	caatatctcc	tgggagaagc	cagcagataa	tgttacaaga
4561	ggaaaagttg	tggggtatga	catcaatatg	ctttctgaac	aatcacctca	acagtdtatt
4621	cccattggcgt	tttcacagct	gttgacact	gctaaatccc	aagaactatc	ttacactgta
4681	gaaggactga	aaccttatag	gatatatgag	tttactatta	ctctctgcaa	ctcagtdggt
4741	tgtgtgacca	gtgcttcggg	agcaggacaa	acttttagcag	cagcaccagc	acaactgagg
4801	ccacctctgg	ttaaaggaat	caacagcaca	acaatccatc	ttaggtgggt	tcacctgaa
4861	gaactgaatg	gacctctctc	tatatatcag	ctggaaagga	gagagtcatc	tctaccagct
4921	ctgatgacca	cgatgatgaa	aggaatccgt	ttcataggaa	atgggtattg	taaatttccc
4981	agctccactc	accagtcaa	tacagacttc	actggcatta	aggccagctt	tcgaacaaaa
5041	gtgcctgaag	gtttgattgt	ctttgcagca	tcacctggca	atcaggaaga	gtattdttgca
5101	cttcagttga	agaaggagcg	tctttattdt	cttdttgatc	ctcaggggtc	accagtggaa
5161	gtaactacaa	ctaagtatca	tggcaaacaa	tatagtgatg	gaaaatggca	tgaaataatt
5221	gctattaggc	atcaggcttt	tggccaaatc	actctggatg	ggatatatac	aggttctctc
5281	gccatcctga	atggtagtac	tgttatggga	gataacacag	gagtdtttct	gggagggtct
5341	ccgcgaagtt	ataccatcct	caggaaggat	cctgagataa	tcacaaaagg	tttdgtgggc
5401	tgtctcaagg	atgtacattt	tatgaagaat	tacaatccgt	cagctattdt	ggaacctctg
5461	gattggcaga	gttctgaaga	acaaatcaac	gtgtataaca	gctgggaggg	atgtcccgtc
5521	tcattaaatg	aggagctca	gttcctagga	gcagggttcc	tggaacttca	tcataatatg
5581	tttcatgggtg	gaatgaactt	tgagatttdc	tttaagttca	gaactgacca	attaaatgga
5641	ttgcttdctt	tcgtttataa	caaagatgga	cctgatttdc	ttgctatgga	gctgaaaagt
5701	ggaatattga	ccttccggtt	aaataaccagt	cttgcttdta	cacaagtgga	tctattgctg
5761	gggctatcct	attgtaatgg	aaagtggaa	aaagtcatta	ttaaaaagga	aggctcttdc
5821	atatcagcaa	gtgtgaatgg	actgatgaag	catgcacggg	agtccggaga	ccagccactg
5881	gtggtgaatt	caccagttta	tgtgggagga	atcccacagg	aactgctgaa	ctcttatcaa
5941	cattdgtgtt	tggacaagg	tttcggtggt	tgcataagg	atgttaaatt	tacacggggt
6001	gctgtcgtta	acttggcatc	tgtgtccagc	ggtgctgtca	gagtdaatct	ggatggatgc
6061	ctatcaactg	acagtgtgtg	taactgcagg	ggaaatgact	ccatcctggt	ttaccaggga
6121	aaagagcaga	gtgtttacga	gggtggtctc	cagccttdta	cagaatacct	gtatcgagtg
6181	atagcctcgc	atgaaggagg	ttcagtatat	agtgattgga	gtcgaggacg	tacaacagga
6241	gcagctccac	aaagtgtgce	aactccctca	agagtdccga	gcttaaatgg	atacagcatt

6301	gaggtgacct	gggatgaacc	tgttgtcaga	ggtgtaattg	agaagtacat	tctgaaagcc
6361	tatagtggag	acagcaccgc	tccacccgcg	atgccctctg	ccagtgtctga	atttgtcaat
6421	acaagcaacc	tcacaggcat	attgacaggc	ttgctaccct	tcaaaaacta	tgcagtaacc
6481	ctaactgctt	gcacttttgg	tggtgtact	gagagctcac	atgcattgaa	catctctact
6541	ccacaagaag	ccccacaaga	ggttcagcca	ccagtagcca	aatcccttcc	cagttctttg
6601	ctgctctcct	ggaacccacc	caaaaaggca	aatgggtatta	taactcagta	ctgtttatac
6661	atggatggga	ggctgatcta	ttcaggcagt	gaggagaact	acatagtcat	agatttagca
6721	gtattttacac	cccaccagtt	tctactaagt	gcatgcacac	atgtgggctg	tacaaacagt
6781	tcctgggtcc	tactgtacac	agcacagctg	ccaccagaac	acgtggattc	cccagttctg
6841	actgtcctgg	attctagaac	tatacacata	cagtggaaac	aaccaagaaa	aataagtggg
6901	attctggaac	gctatgtatt	atatatgtca	aaccatacac	atgattttac	aatttgaggt
6961	gtcatctata	acagtacaga	acttttccag	gatcatatgc	tacaatacgt	tttacctggt
7021	aataaatatc	tcatcaagct	gggagcttgc	acaggtgggtg	ggtgcacagt	gagtgaggcc
7081	agtgaggccc	taactgacga	ggacataccc	gaaggcgtgc	cagcccccaa	agcccactca
7141	tattcacctg	actcctttaa	tgtctcctgg	actgagcctg	aatatccgaa	tggtgttatc
7201	acgagttatg	gatttatatct	agatgggtata	ttaatccaca	attcctcaga	actcagctat
7261	cgtgcttacg	gatttgctcc	ttggagttta	cattccttca	gagtcgaagc	atgcacggcc
7321	aaaggttgtg	ctctgggccc	actggtggaa	aatcgaaact	tagaagctcc	tctgaagga
7381	acagtaaatg	tgtttgtcaa	aacacaggga	tcccgaaag	cccacgtgag	gtgggaagca
7441	ccttttcgcc	ctaattggact	cttaacacac	tcagtccttt	tcactgggat	attctatgta
7501	gacccagtag	gtaataacta	cacccttctg	aatgtcacia	aagtcatgta	cagcggagaa
7561	gagacaaacc	tttgggtgct	catcgatggg	ctggttcctt	ttaccaacta	tactgtacaa
7621	gtgaatatct	caaataagcca	aggcagcttg	ataactgatc	ctataacaat	tgcaatgcct
7681	ccaggagctc	cagatggcgt	gctgcctccc	aggctttcat	ctgccactcc	aaccagtctt
7741	caggttgtct	ggtctacacc	agctcgtaat	aacgctcctg	gctctcccag	ataccaactc
7801	cagatgaggt	ctggcgactc	cacccatgga	tttctagagt	tattttccaa	tccttctgca
7861	tcgttaagct	atgaagtgag	tgatctccaa	ccgtacacag	agtatatgtt	tcgggtgggt
7921	gcctccaatg	gatttgccag	tgcatcatagt	tcttggattc	cattcatgac	cgcagaggac
7981	aaacctggac	ctgtagtctc	tccgattctt	ctggatgtga	agtcaagaat	gatgttgggt
8041	acctggcagc	atcctagaaa	atccaatggg	gttattaccc	attataacat	ttatctacat
8101	ggcgtctctat	acttgagaac	tcctggaaat	gtcactaatt	gcacagtgat	gcatttacac
8161	ccatacactg	cctataagtt	tcaggtagaa	gcctgcactt	caaaaggatg	ttccctttca
8221	ccagagtccc	agactgtatg	gacactccca	ggggcaccgg	aagggatccc	aagtccagag
8281	ctgttctctg	atactccaac	atctgtgatt	atatcttggc	aacccccctac	ccaccccaat
8341	ggcttggtgg	agaatttcac	aattgagaga	agagtcaaag	gaaaggaaga	agttactacc
8401	ctggtgactc	tcccaggagg	tcattccatg	aggtttattg	acaagacttc	tgctcttagc
8461	ccatggacaa	aatatgaata	tcgggtactg	atgagcactc	ttcatggagg	cacaacagac
8521	agtgtcttgg	tagaagttac	cacaagaccc	tcacgacctg	ctgggtgtga	gccacctgtg
8581	gtgacagtgc	tggaaccgga	tgcagtccag	gtcacttggg	aacccccact	catccagaac
8641	ggagacatac	ttagctatga	gattcacatg	cctgaccctc	acatcacttt	aaccaatgtg
8701	acttccgcag	tgtaaagtca	aaaagttact	catctgatcc	ctttcactaa	ttattctgtc
8761	accattgttg	cttgctcagg	gggtaatggg	taccttggag	ggtgcacaga	gagtttacct
8821	acctatgtta	ccactcaccc	caccgtacct	cagaatgttg	gcccattgtc	tgtgattcca
8881	ctaagtgaat	catatgttgt	gatttcttgg	caaccacat	ccaagccaaa	tggaacctaat
8941	ttgagatatg	agcttctgag	acgtaaaatc	cagcagccac	ttgcatcaaa	ttccccagaa
9001	gatttaaatc	ggtggcacia	tatttattca	ggaactcagt	ggctttatga	agataagggg
9061	cttagcaggt	ttacaacctc	tgaatatatg	ctcttcgtac	acaacagtgt	gggttttaca
9121	ccgagccgag	aagtgactgt	gacaacgtta	gctgggtctc	cagagagagg	agccaatctc
9181	actgcgagtg	tccttaacca	cacagccatc	gacgtgaggt	gggctaaacc	aactgttcaa
9241	gacctacaag	gtgaagttga	atattacaca	cttttttggg	gttctgctac	ctcaaacgac
9301	tctctaaaaa	tcttgccaga	tgtaaaactc	catgtcattg	gccacctaaa	gccaaacaca
9361	gagtattgga	tctttatctc	tgtcttcaat	ggagtccaca	gcatcaacag	tgcaggactt
9421	catgcaacca	cttgcatggg	ggagcctcag	ggcatgcttc	ctccagaggt	tgtcatcatc
9481	aacagtacag	ctgtacgtgt	catctggaca	tctccttcaa	acccaaatgg	tggtgtcact
9541	gagtattcta	tctatgtaaa	taataagctc	tacaagactg	gaatgaatgt	gcctgggtcg
9601	tttattctga	gagacctgtc	tcccttcaat	atctatgaca	ttcaggttga	agtctgcaca
9661	atatattgcct	gcgtgaaaag	caatggcaacc	caaattacca	ctgtggaaga	cactccaagt
9721	gatataccaa	caccacaat	tcgtggcatc	acttcaagat	ctcttcaaat	tgattgggtg
9781	tctccacgga	agccaaatgg	catcattctt	ggatatgatc	tcctatggaa	aacatggtat
9841	ccatgcgcta	aaactcaaaa	gttagtgacg	gatcagagtg	atgagctctg	caaggcagtg
9901	aggtgtcaaa	aacctgaatc	tatctgtgga	cacatttgcct	attcttctga	agctaaggtt
9961	tggtgtaacg	gagtgtctca	taaccccaag	cctggacatc	gctgttgtga	agaaaagtat
10021	atcccgtttg	ttctgaattc	tactggagtt	tggttgggtg	gccgaataca	ggaggcacia

10081	ccaaatcatc	agtgtctgctc	tgggtatttac	gctagaattc	taccaggtga	agtatgtctgt
10141	ccagatgaac	agcacaatcg	ggtttctgtt	ggcattgggtg	attcctgctg	tggcagaatg
10201	ccgtactcca	cctcagga	ccagatttgc	tgtgctggga	ggcttcatga	tggccatggc
10261	cagaagtgtc	gtggcagaca	gattgtgagc	aacgatttag	agtgttgtgg	tggagaagaa
10321	ggagtgggtg	acaatcgctt	tccaggtatg	ttctgttgtg	ggcaggatta	tgtgaatatg
10381	tcagatacca	tatgtctgctc	agcttccagt	ggagagtcta	aagcacatat	taaaaaagaat
10441	gacccgggtg	cagtaaaaatg	ctgtgagact	gaacttattc	caaagagcca	gaaatgctgt
10501	aatggagttg	gatataatcc	tttgaatat	gtttgctctg	acaagatttc	aactggaatg
10561	atgatgaagg	aaaccaaaga	gtgcaggatc	ctctgccag	catctatgga	agccacagaa
10621	cattgtggca	ggtgtgactt	caactttacc	agccacattt	gcactgtgat	aagagggtct
10681	cacaattcca	caggggaaggc	atcaattgaa	gaaatgtgtt	catctgccga	agaaaccatt
10741	catacaggga	gtgtaaacac	gtactcttac	acagatgtga	acctcaagcc	ctacatgaca
10801	tatgagtaca	ggatttctgc	ctggaacagc	tatgggagag	gactcagcaa	agctgtgaga
10861	gccagaacaa	aagaagatgt	gcctcaagga	gtgagtcccc	ctacgtggac	caaaatagac
10921	aatcttgaag	atacaattgt	cttaaaactgg	agaaaaccta	tacaatcaaa	tggctcctatt
10981	atttactaca	tccttcttctg	aaatggaatt	gaacgttttc	ggggaacatc	actgagcttc
11041	tctgataaag	aggggaattca	accatttcag	gaatattcat	atcagctgaa	agcttgcacg
11101	gttgcgtggc	gtgccaccag	tagcaaggta	gttgcagcta	ctaccaagg	agttccggag
11161	agcatcctgc	caccaagcat	cacagcccta	agtgcagtgg	ctctgcatct	gagctggagt
11221	gtccctgaga	aatcaaacgg	cgctattaaa	gagtaccaga	tcaggcaggt	tgggaaaggt
11281	ctcatccaca	ctgacaccac	tgacaggaga	cagcatacgg	tcacaggtct	ccagccatac
11341	accaactaca	gcttcaactct	tacagcttgt	acatctgctg	ggtgcacttc	aagcgagcct
11401	tttctaggtc	agacactgca	ggcagctcct	gaaggagttt	gggtgacacc	tcgacacatt
11461	atcatcaatt	ctacaacagt	ggaattatat	tggagtctgc	cagaaaagcc	caatggcctc
11521	gtttctcaat	atcaattgag	tcgtaatgga	aacttgcttt	tcctgggtgg	cagtgaggag
11581	cagaatttca	ctgataaaaa	cctggagccc	aatagcagat	acacttacia	gttagaagtc
11641	aaaactggag	gtggcagcag	tgctagtgat	gattacattg	ttcaaacc	tatgtcaaca
11701	ccagaagaaa	tctatcctcc	atataatatc	acagtaattg	ggccttattc	tatatgtgta
11761	gcttggtgatac	caccagggat	cctcatcccc	gaaattcctg	tggagtacaa	tgtcttactc
11821	aatgatggaa	gtgtaacacc	tctggccttc	tccgttgggtc	atcatcaatc	cacccttctg
11881	gaaaatttga	ctccattcac	acagtatgag	ataaggatac	aagcatgtca	aaatggaagt
11941	tgtggaggtta	gcagtaggat	gtttgtcaaa	acacctgaag	cagccccaat	ggatcttaat
12001	tctcctgttc	ttaaggcact	ggggtcagct	tgcatagaga	ttaagtggat	gccacctgaa
12061	aaaccaaagt	gaatcatcat	caactacttt	atctacagac	gccctgctgg	cattgaagag
12121	gagtctgttt	tatttgtctg	gtcagaagga	gcccttgaat	ttatggatga	aggagacacc
12181	ctgaggcctt	tcacactcta	cgaatatcgg	gtcagagcct	gtaactcaa	gggttcagt
12241	gagagtctgt	gtcattaac	acaaactctg	gaagctccac	ctcaagattt	tccagctcct
12301	tgggtcctcaag	ccacgagtgc	tcattcagtt	ctgttgaatt	ggacaaaagcc	agaatctccc
12361	aatggcatta	tctcccat	ccgtgtgggtc	taccaggaga	gacccgacga	tcctacattt
12421	aacagcccta	ccgtgcatgc	tttcacagt	aagggaacaa	gccatcaagc	ccacctgtac
12481	gggttagaac	cattcacaa	atctgcatt	ggtgttgtgg	ctgcaaacca	tgaggagaa
12541	attttaagcc	cttggaactct	gattcaaacc	ttagaatctt	ccccaagtgg	actgagaaac
12601	tttatagtag	aacagaaaga	gaatggccgg	gcattgctac	tacagtgggtc	agaacctatg
12661	agaaccaatg	gtgtgattaa	gacatacaac	atcttcagt	acgggttcct	ggagtactct
12721	ggtttgaatc	gtcagtttct	cttcgcgcgc	ctggatcctt	tcactctcta	cacactgacc
12781	ctggaggcct	gcaccagagc	aggtgtgtga	cactcggcgc	ctcagcctct	gtggacagat
12841	gaagcccctc	cagactctca	gctgttcctt	actgtccact	ctgtgaagtc	caccagtgtt
12901	gagctgagct	ggtctgagcc	tgttaaccca	aatggaaaaa	taattcgcta	tgaagtgatt
12961	cgcagatgct	tcgagggaaa	agcttgggga	aatcagacaa	tccaggccga	cgagaaaatt
13021	gttttcacag	aatataacac	tgaaaggaat	acatttatgt	ataatgacac	aggtttgcaa
13081	ccatggacgc	agtgtgaata	taaaatctac	acttggaatt	cagctgggca	tacctgtagc
13141	tcttggaatg	tggtgaggac	attgcaagca	cctccagaag	gtctctctcc	acctgtgata
13201	tcctatgttt	ctatgaatcc	ccaaaaactg	ctgatttcct	ggatccacc	agaacagtct
13261	aatggtatta	tccagtccta	taggcttcaa	aggaatgaaa	tgctctatcc	ttttagcttt
13321	gatcctgtga	ctttcaatta	cactgatgaa	gagcttcttc	ctttttccac	ctatagctat
13381	gcactccaag	cctgcacgag	tgaggatgct	tccaccagca	aaccaccag	catcacaact
13441	ctggaggcgtg	ctccatcaga	agtcagccct	ccagatcttt	gggccgtcag	tgccactcaa
13501	atgaatgtat	gttggtcacc	gcccacagt	caaaatggaa	agattactaa	atatttagtt
13561	agatatgata	ataaagagtc	ccttgctggc	cagggcctgt	gcctgctgg	ttcccacctg
13621	cagccttact	ctcagtataa	cttctccctt	gtagcctgca	cgaatggagg	ttgcacagct
13681	agtgtgtcaa	aatctgcctg	gacaatggag	gccctgccag	agaacatgga	ctctccaaca
13741	ttgcaagtca	caggctcaga	atcaatagaa	atcacctgga	aacctccaag	aaacccaaat
13801	ggccagatca	gaagttatga	acttaggagg	gatggaacca	ttgtatatac	aggcttggaa

13861	acacgctatc	gtgattttac	tctcacccca	gggtgtggagt	atagctacac	agtaactgcc
13921	agcaacagcc	aagggggtat	tttgagtcct	cttgtcaaag	atcgaaccag	cccctcagca
13981	ccctcaggga	tggaaacctcc	aaaattgcag	gccaggggtc	ctcaggagat	cttagtgaac
14041	tgggaccttc	cagtgagaac	aatggtgat	atcatcaatt	ataccctctt	catccgtgaa
14101	ctatttgaaa	gagaaactaa	aatcatacac	ataaacacaa	ctcataattc	ttttggtatg
14161	cagtcataa	tagtaaacca	gctgaagcca	tttcacaggt	atgaaatacg	aattcaagcg
14221	tgcaccaccc	tgggatgtgc	atcaagtgc	tggacattca	tacagacccc	tgagattgca
14281	cctttgatgc	aacccccctcc	acatctggag	gtacaaatgg	ctccaggagg	attccagcca
14341	actgtttctc	ttttgtggac	aggaccgctg	cagccaaatg	gaaaagtttt	gtattacgaa
14401	ttatacagaa	gacaaatagc	aactcagcct	agaaaatcca	atccagtcct	aatctataac
14461	ggaagctcaa	catcttttat	agattccgaa	ctattgcctt	tcacagagta	tgagtatcag
14521	gtctgggcag	tgaattctgc	aggaaaagcc	cccagtagct	ggacatgggtg	cagaaccggg
14581	ccagccccac	cagaagggtct	cagagccccc	acgttccatg	tgatctcttc	tacccaagca
14641	gtggtcaaca	tcagtgtccc	tgggaagccc	aacgggatcg	tcagtctcta	caggctgttc
14701	tccagcagcg	cccatggggc	tgagacagtg	ctatccgaag	gcatggccac	ccagcagact
14761	ctccatggcc	ttcaagcctt	cactaactac	tctattggag	tagaggcctg	cacctgcttc
14821	aactgttgca	gcaaaggacc	gacagctgaa	ctgagaaccc	atcctgcccc	accctcagga
14881	ctgtcctctc	cacaaatcgg	gacgtggcc	tcaaggacgg	cctccttccg	gtggagtccc
14941	cccatgttcc	ccaatggtgt	cattcacagc	tatgaactcc	aattccacgt	ggcttgccct
15001	cctgactcag	ccctccccctg	tactcccagc	caaatagaaa	caaagtacac	ggggctgggg
15061	cagaaagcca	gccttggggg	tctccagccc	tacaccacat	acaagctgag	agtggtggca
15121	cacaacgagg	tgggcagtac	ggcttccgag	tggatcagtt	tcaccaccca	aaaagaattg
15181	cctcagtacc	gagccccatt	ttcgggtggac	agcaatttgt	ctgtggtgtg	tgtgaactgg
15241	agtgcacact	tcctcctgaa	cggccaactg	aaggagtacg	tgtaaccga	cggagggcga
15301	cgcgtgtaca	gcggcttgga	caccaccctc	tacataccga	gaacggcgga	caaaaccttc
15361	tttttccagg	tcactctgcac	gactgacgaa	ggaagtgtta	agacgccgtt	gatccaatat
15421	gatacctcta	ctggacttgg	cttggctcta	acaactcctg	ggaaaaagaa	gggatcgcgg
15481	agcaaaaagca	cagagttcta	cagcgagctg	tggttcatag	tgtaaatggc	gatgtctggc
15541	ttgatcttgt	tggccatttt	tctgtccctg	atactacaaa	gaaaaatcca	caaagagcca
15601	tatatcagag	aaagacctcc	cttggtacct	cttcagaaga	ggatgtctcc	attgaatgtt
15661	taccaccggg	gggaaaacca	tatgggggtta	gccgatacca	aaattccccg	gtctgggaca
15721	cctgtgagta	tccgcagcaa	ccggagtgca	tgtgtcctgc	gcatccccgag	tcaaaaccaa
15781	accagcctaa	cctactccca	gggttctctt	caccgcagcg	tcagccagct	catggacatt
15841	caagacaaga	aagtcttgat	ggacaactca	ctgtgggaag	ccatcatggg	ccacaacagt
15901	ggactgtatg	tggatgaaga	ggacctgatg	aacgccatca	aggatttcag	ctcagtgact
15961	aaggaacgca	ccacattcac	agacacccac	ctgtaaagga	tggaaaccca	gaagacgtaa
16021	ccctggaatg	caaggctctgc	acccatttcc	tcctgggtta	tcactcacac	aatcataatg
16081	ctgaaaagcc	attgtttatt	atcctataat	tctttaaaga	aatgatgact	gtttttgaaa
16141	gtgttccttc	ctaatagagg	tctaagaaat	gatatttttc	tcactttaa	tgagagagaa
16201	tattcatatg	aaaatacttg	atttgctctt	attttgtaga	agacaaagaa	gtatgtaatt
16261	gtcacttggt	tctgtttggc	agtgatgctc	ctggttaact	gaataatcag	tggcaatttc
16321	aagatggctc	acagttgtta	gaagtagtaa	gttagttact	ggctcaaaaa	tgattctggt
16381	gaaaggatgt	cactgctggt	catttctatc	tgccatttct	gtcaggggtg	acacaatcct
16441	gcaagaatag	ttatttctaat	gatcacagct	gctaaatgaa	tcccaaactt	tgaccaggt
16501	cgacaaaact	ttctgaaggt	tctattttat	taccatacat	agggttactt	accaaacttt
16561	ttgacaaggc	tgaaggttct	atttatttac	aatacatagg	gttactcacc	aaactttttg
16621	acaaggcaac	acataactta	cacataaatg	tctctgttct	tgcatttatg	aattttccaa
16681	aaatctaagg	agtaaacagc	ttattttatac	attttgagga	gaaaacaaag	tgtttacta
16741	ggaacacctc	tacttgaacc	aatgttttta	tttcatatat	tttatagttt	tgaaactagt
16801	ttctcataaa	attctgtcaa	ttcactgaat	atcagagaat	actgacatct	tcaacctagc
16861	acattttcaa	tggaaactac	tgttctattt	gcaatattag	gctgcgtgaa	attttaaaag
16921	gaaaaatgta	tctgttcctt	ctagcattaa	catatataca	tgtagagaca	agactatacc
16981	tatgtgtata	tatatgtata	tcagtatat	attactctgc	actatatccc	ttcttttttg
17041	agaactagcc	attatttttag	ccacagaatc	agtaagaaca	gatgatatgc	aacagtacca
17101	attacgggtc	aaaaatgtct	gtcacctgct	ctagttggat	tacaaagtca	ttggtgaaag
17161	tcttatggca	agaaaaattt	tcttgcaaat	catccacata	aaatcagata	tttaaatttg
17221	ttcttcatgg	aaaacagagt	aagaaaacct	cttgtcttcc	ttcatcctta	aaggcttttg
17281	tgaccccgag	aaaatattga	ctctgtctaa	cacacaatag	tcacaatact	ttttgtgaat
17341	ctacaaccag	agacaggcaa	aaacttgtaa	agtaagggat	agtcttactt	attctgcctg
17401	aaaacaatgt	attaccccgag	ggcccaacag	taaaagattg	tggacttttt	gggtattgag
17461	atttcatcta	gctctgtgag	agagcagctc	ctcagactga	ccaactccta	gacaaagttt
17521	gccaaccata	agtggtcaaaa	gcacaggcca	gtattaagca	gaagttctac	caccttatta
17581	gaactgctat	aaacaaaagc	atctgaaata	attgtgcaca	tctggcagtg	actgtagaaa

```

17641 atacgaaata tatatttctc gccaaagtttt tatactttct gaaatgaaaa cataggattg
17701 actagttttac tgggtttttat tcccatatgc cgattctggg acaataaagt tgttttaaagc
17761 tggcacaaat aagcattaac caaggctgtg tccaccttct gtgagctact taaggatatat
17821 aggaaaggag tggtcacaaa cttgcatcct aatccttggg ggactcttct aagaatacacg
17881 tttgctagtc acaaagaata gtctacaaat atgctttgct aggttcagaa gattgagttt
17941 atcctgattt ttgaaaaatt aaccagggtat ctttatcact gtgtattttt ccaagcacag
18001 tataaaattt taacaacgca caaaaaata cagaactgca ggggatttta tcttgatca
18061 ttatccattt aatcatctaa ttagacatga actcagttag ctgaatcatt tacattttga
18121 ctccatagct tagggcagac agaagcctgt atggcttctg cccagaactc tgtcccctgc
18181 tacatgtcta agtttacttg tatttatttc agagaagaac tctaagatgt tgctttgcta
18241 ctttaagtgg tattgctgct caagcctcta ttatacaaac catgcagact cgcctctaga
18301 gattctgatt cgggtgatct ggggtgtgtg gctgaggcat cagtactttt taaagcttcc
18361 aggtgttcta atgttgagac ccactgatgt tccacaatct ggaagaaatc atgtacagga
18421 ataatatgct atgcacaggg actatgctcc ttggctcacc ccttctccct tataaacaat
18481 gagcagttct tgatgaacct ctttaaattt aaatctcctg actcacattt taccaattgt
18541 acatgccaca ttctcagctt acgaactacc atgttttggt attcttaata tcaactgttt
18601 ggtaagagta cagttgtttt tatacactct aagaaatgtg tttataatct actgtaattt
18661 ccactaaatg gaaccctaat attaatgtta tggtagcata tactgatgta aaaatctgac
18721 tggcatccat gaacacaccg gtaaataaaa catagtccaa gtggaagaat tcattaataa
18781 ggaactttta attatgtcac aaatgaatag ttggtttcca atgcacaaat atcatgtaa
18841 ctaatctaaa gatggtttgc ttaataaata tttgaatgtg acc

```

L3 ANSWER 22 OF 24 GENBANK® COPYRIGHT 2005 on STN

```

LOCUS (LOC):          AY077844      GenBank (R)
GenBank ACC. NO. (GBN): AY077844
GenBank VERSION (VER): AY077844.1  GI:22212215
CAS REGISTRY NO. (RN): 447036-98-8
SEQUENCE LENGTH (SQL): 6146
MOLECULE TYPE (CI):   mRNA; linear
DIVISION CODE (CI):   Rodents
DATE (DATE):          12 Aug 2002
DEFINITION (DEF):     Rattus norvegicus usherin (Ush2a)
                        mRNA, complete cds.
SOURCE:
  ORGANISM (ORGN):     Rattus norvegicus
                        Eukaryota; Metazoa; Chordata; Craniata; Vertebrata;
                        Euteleostomi; Mammalia; Eutheria; Rodentia;
                        Sciurognathi; Muridae; Murinae; Rattus
NUCLEIC ACID COUNT (NA): 1553 a 1520 c 1425 g 1634 t 14 others
REFERENCE:
  1 (bases 1 to 6146)
  AUTHOR (AU):         Huang,D.; Eudy,J.D.; Uzvolgyi,E.; Davis,J.R.;
                        Talmadge,C.B.; Pretto,D.; Weston,M.D.; Lehman,J.E.;
                        Zhou,M.; Seemayer,T.A.; Ahmad,I.; Kimberling,W.J.;
                        Sumegi,J.
  TITLE (TI):          Identification of the Mouse and Rat Orthologs of the
                        Gene Mutated in Usher Syndrome Type IIA and the
                        Cellular Source of USH2A mRNA in Retina, a
                        Target Tissue of the Disease
  JOURNAL (SO):         Genomics, 80 (2), 195-203 (2002)
  OTHER SOURCE (OS):    CA 137:347242
REFERENCE:
  2 (bases 1 to 6146)
  AUTHOR (AU):         Sumegi,J.; Huang,D.; Davis,J.R.
  TITLE (TI):          Direct Submission
  JOURNAL (SO):         Submitted (31-JAN-2002) Center for Human Molecular
                        Genetics, University of Nebraska Medical Center, 985454
                        Nebraska Medical Center, Omaha, NE 68198-5454, USA

```

FEATURES (FEAT):

Feature Key	Location	Qualifier
source	1..6146	/organism="Rattus norvegicus" /db-xref="taxon:10116"

gene  
CDS

1..6146  
183..4721

/chromosome="13"  
/map="between d13rat49 and  
d13rat76"  
/gene="Ush2a"  
/gene="Ush2a"  
/note="USH2A; extracellular matrix  
protein; similar Homo sapiens  
Usher syndrome type IIa protein"  
/codon-start=1  
/product="usherin"  
/protein-id="AAL78289.1"  
/db-xref="GI:22212216"  
/translation="MYYLALSSGFLGQAIKTSIL  
AYLASVLLAASQGVFPRLNVGAF  
KKVSIVPSHATCGYPGPSTFCRSAAVAAEHAQLCA  
ERLCIQDCPYRSASPPYTALLEG  
RSCIPADHGD LHPYRSNSTSFIFGSHKNCPSLQ  
APRLAAEFTLAVWLKPERGSTMCV  
LEKTADGQIVFKVTISERETMFYYRTVNGLQPPI  
KVMTPGRILMKKWIHHTVQVHETE  
VSSFVDGLEENSTAFDTRTLRDSIMDSVPSTVLI  
GQSLNGSEL FVGRMQDFRLYNVSL  
TNREILELFSGDLPHLHIQSHCRCPGSHPRVHPS  
VQQYCI PNGVEDTLQHRVSRLNPE  
AHPLSFINDDDVATSWISHVFTDITQLNQGVAIS  
IDLENGQYQVFQITIRFSSPQVPA  
MRIQRKKADKSLWEDWQYFARNCSVWGMKNNGDL  
ENPNSVNCLQFPEFIPFSHGNTF  
DLLTSGQKHRPGDYDFYNSSLLQEFMTATQIRLY  
FRGLFYPAWHTVDSRHRYAVDEI  
TIIIGRCQCHGAETCDRTRRPYRCLCSPHSFTEG  
PQCGRCSPLYNDKPFERSGNKVHAF  
NCKPCQCHGHASSCHYDASMDPFPLEYNRGGGGV  
CDDCQHHTTGRNCESCQDYFYRPI  
GADPADPEVCKKHCDCNRDGTNRGSLLCDLVGDQC  
DCKRRVSGRRCFRCHIGFYGLQAL  
DPDCCRPCDCNPSGTVDGDITCHNSGQCCKAN  
VIGLRCDRCSFGFKFLRSLNADGC  
EPCHCNLHGSVNQLCDPLSGQCVCKKEAKGLRCD  
VCRENFYGLPWSACEVDCNRAGT  
QAGTVCAETGQCVCKPSVGGRRCSCECKEGYFNL  
RQNDSHLCLPCNCEKTGTVNGSLL  
CDKSTGQCPCKLGVTGLRCHQCKPHRFNLTMNDP  
QGCQACDCDSL GTLLGSMCDPVSG  
QCLCLPHRQERRCVQCQPGCYSSPSNATGCLPCL  
CHTVATKNCICNSVTGHCYCPDPS  
TTGLSWHQCDRYFRFDPLTGRCRPCHCHVAGAS  
NGTCAVTGQCFCKEFVTGSKCDT  
CVPGASHLDVNNLLACSKTPSQPPPRGRVQSSS  
AINLSWSPDPFNAHWLTYTLFRD  
DSEIYTTDDQHPYYTQYFLDTSLSPHTAYSYYIE  
TSNVHSSTRSIPVIYKTKPEGSEG  
HLNLTHIIPVADSITLVWTGLSNHSGPIEKYVL  
SCTPVDHTEPCVSYEGPETSATIR  
NLVPFTQYCFSVQGCTNGSCLYSSPITVTTAQAP  
PQRQEPPTVWKISPTTELKVEWSRP  
VDSNGV IIRYELMKRWPSTEE SLVFESHGWFHS  
HPASPSANQSENVLQDPQVSTVLS  
GLDPHTEYAFRVLAVNMAGSVSSAWASERTGES  
PVFMAAPSVSPLSPYSLSVSWEKP  
AENFTRGEIIGYKISMVSERSPQRDVPVMCSKLV  
HFAESQDQSYIVQRLKPYRTYSFT  
VSLCASVGCVT SALGEGQTLTAGKN

VLTNTKKCTHVGNQYYRSAVLWASYMSSLFTAP  
SSDILDVVYLESFKQNH"

SEQUENCE (SEQ) :

```

1  ctgtcctctc taaggacatc cttactctgt cttccctgtg aaagtgtgtc tgcggctctcc
61  cagagatgga gaatctctgt attcaagtgc ccagcctgga tcccagtgtt catagtgcac
121 agagatccct ggacagtagt ttaggaaagc ttatcatcagg tgaagaatac ttttctgtca
181 tcatgtatta cctggctctc tcatccggtc tcttgggtca ggccattaaa acatcgatcc
241 ttgcctatctt ggccctcagt ttgctggctg cctcgagggg cgttttccca aggctggaga
301 acgtgggtgc tttcaagaag gtatccattg tgccaagcca cgccacgtgt ggataccag
361 gccccagcac cttttgtcgt agcgccgtgg cagctgagca tgcgcagttg tgtgccgaga
421 ggctgtgtat ccaggactgc ccctaccgct ctgcctctcc yccctatacc gccctcctag
481 aaggcctcag gagctgcatt cctgcagacc acggtgatct ccacccttac tccagaagca
541 actccacgag cttcatattc ggaagtcaca agaactgccc ctctctacag gctccgaggc
601 tggcagcaga atttacctta gccgtgtggt tgaagcccga gcgaggcagc actatgtgtg
661 tgctagaaaa gacagcggat gggcagattg tgttcaaagt tacaatatct gagagagaga
721 ccagtgttta ttatcgacac gtaaatggtt tgcagcctcc aataaaaagta atgacaccag
781 ggagaattct tatgaagaaa tggattctac acactgtgca ggtgcatgag acggaagcca
841 gtccttttgt ggatggtttg gaggagaaca gcaactgcatt cgatacaaga actctccgag
901 attcaatcat ggactcagtc cccagcactg tactaatagg acagagttta aacggttcag
961 agctgtttgt tggaagaatg caagatttcc gattgtacaa cgtgtcactt acaaacagag
1021 agattctaga gctcttttct ggagatctcc cccacttgca catccagtca cattgccgat
1081 gtccaggcag ccatccccgt gtccaccctc cggttcagca gtattgcatt cccaatggtg
1141 tggaagacac actccagcat cgagtgtcac ggctgaatcc tgaagcccac cctctctcct
1201 tcatcaatga tgacgacgtg gctacttcat ggatctctca tgtgtttaca gacattacac
1261 agctcaatca aggagtggca atctctatag acttgaaaaa tggacagtat cagggtgttc
1321 aaatcaccat tcggttctcc agccccagc ctgtggcgat gcggatccag aggaagaagg
1381 cagacaagtc tctctgggag gactggcagt attttgcgag aaattgcagt gtttggggaa
1441 tgaaaaacaa tggagatctg gaaaaatcca attctgtcaa ctgtctccag tttcccgagt
1501 ttatcccggt tttccacggt aatgtcacct ttgacctcct aacatctgga cagaagcatc
1561 gtcctgggga ctatgacttt tacaacagct cattgtctga agaattcatg acagccactc
1621 agatacggct gtacttccga gggctgttct atcccgttg gcacactgtt gactcaagac
1681 acagatacta tgcagtggat gagatcacca tcattgggag atgtcaatgc catggccatg
1741 ccgagacctg tgacagaacc agacggcctt accggtgtct ctgctcaccg cacagcttca
1801 ctgaagggcc ccagtgtggt cgatgctccc ctctttataa tgacaagcct ttccgcagtg
1861 gtaacaaagt tcatgcattc aactgttaag cttgtcagtg ccatggccat gccagcagct
1921 gccactatga tgcttccatg gacctatttc cctggagta caacagaggt ggcggaggag
1981 tctgtgatga ctgtcagcac cacacaacag ggagaaaactg tgagtcatgc caggactact
2041 tttaccgacc cattggtgcc gatcctgctg acccagaggt ttgcaagcac tgtgactgca
2101 acagggacgg aactagaaac ggcagcctcc tctgtgacct ggttggagac caatgtgatt
2161 gtaagagacg tgtgtctggc agacggtgct ttcggtgcca tattgggttc tatggcctgc
2221 aggcgtgga tcttgattgc tgcgcgccct gtgactgtaa tccctctggg accgtggatg
2281 gagatattac ctgtcaccac aattcaggcc agtgctcatg caaagcgaac gttattgggc
2341 tccgatgcga tcgctgcagt ttcggattta agtttctccg gaggttgaac gctgacggat
2401 gtgaaccttg ccattgtaac ctccatggct cgggtgaacca actctgtgac ccactctctg
2461 ggcagtgtgt gtgcaagaag gaagctaaag gacttaggtg tgacgtttgc agagaaaact
2521 tttatgggct gccctggagt gcttgtgagg tctgtgattg caacagggct ggcaccagg
2581 ctgggaccgt gtgtgatgct gagacagggc agtgcgtttg taagcccagt gttggaggga
2641 gacgatgtag tgagtgtaaa gaagggtact tcaacctacg tcagaatgat tcccacctct
2701 gcttaccttg taactgtgag aagaccggga cagtaaaccg ctctctactg tgtgacaagt
2761 caactgggca gtgtccctgc aaactagggg taactggtct gcgttgccac cagtgaagc
2821 ctcacagggt caatttgacg atggacaatc ctcaagggtg tcaggcgtgc gactgtgact
2881 cgttggggac attacttgga agcatgtgtg acccgtcag tggccagtgc ctatgcctac
2941 ctcatcgtca agaaagaagg tgtgtacagt gtcaaccagg gtgttacagt tctcccagca
3001 atgccactgg ctgcctgcca tgccttatgcc acacagttgc taccaagaat tgcactctga
3061 atagtgtcac gggacattgc tattgccttg accctcaac cactgggctg tcatggcacc
3121 agtgccaaga taggtacttt agatttgatc cctgactgg aagatgcagg ccttgcact
3181 gtcagttagc aggagcctcg aatggaactt gtgatgcagt cacaggccag tgtttctgca
3241 aagagtttgt cactggctca aaatgtgaca cttgtgttcc tgggtgcaagc cacttgagcg
3301 tcaacaatct attagcttgt tcaaaaactc catctcagca acctccaccc agaggacggg
3361 ttcaaagctc ttctgccatc aatctctcct ggagtcaccc tgattttccc aatgcacact
3421 ggcttacata cactctgttc agggatgatt ccgagatcta cacaactgac gatcagcacc
3481 cttactatac tcagtacttc ttggacacta gtctgtcacc gcacacagca tattcatatt

```

3541 acatagagac ctccaatgtg cacagttcaa caaggagcat tcctgtgatt tacaagacaa  
 3601 agccagaggg ctcagaaggc cacttgaact tgactcacat cattcctgtg gcctcagact  
 3661 ccattacact tgtctggact ggactctcca accactctgg tcctatagag aagtatgttt  
 3721 tatcatgcac acctgtggac cacactgagc cctgtgtctc ttatgaaggc ccagagacct  
 3781 cagctaccat caggaatctg gttccattca cccagtactg tttctctgtc cagggctgta  
 3841 ctaatgggag ctgtttatat agctcaccta ttacagtaac cacagcccaa gcgcctcccc  
 3901 aaaggcagga gccacctaca gtatggaaaa tcagtcaccac agaactcaaa gtagaatggt  
 3961 ctcggccagt ggattcaaat ggtgtaatta tcaggtatga gttatacatg aagagatggc  
 4021 cgtccacaga ggagagtctc gtgtttgaga gccatgggtg gttccattct caccagcct  
 4081 caccgtcagc caatcagagt gagaatgtgc ttcaggatcc ccaagtcagc acagtcctct  
 4141 ctggccttga cccacacaca gagtatgcat ttaggggtgt ggctgtgaat atggctggca  
 4201 gtgtgtcatc tgcctgggct tcagaaagaa caggagaatc agcacctgtg ttcattggctg  
 4261 ctccttcagt ctctccactc tcaccatact ccctcagtg ctcctgggag aagccagcag  
 4321 aaaactttac aagaggagag attatagggt acaagatcag catggtttct gaacgttccc  
 4381 ctcaacgaga tgttccagtc atgtgttcaa agctgggtga ttttgctgag tccaagacc  
 4441 agtcttacat cgttcagaga ctcaagcctt ataggaccta cagttttact gtctccctct  
 4501 gcgcttccgt gggctgtgta accagtgtct tgggagaagg acaaagccta acagaggta  
 4561 agaagcttct aacgaatata aagaaatgca ctcacgttgg gaatcagtat tacaggtctg  
 4621 ctgtactttg ggcttcatat atgtcttctc tattcactgc tccttccctca gacatcctg  
 4681 atgtggttta tcttgagagt tttaaacaaa accaacatta gccaaaggta ttggcacatc  
 4741 agaagagctc caaattagat acaggaagag aatgggtcct gtgcccagca tctaactagg  
 4801 gcctccaaat ttcctggtag ttgtaagatg cacttaggag ggatcctata aagtcacatg  
 4861 acatttcgtc cttaaattgt aacttctctt ctcgggttgg gtcattgact cctgtcccat  
 4921 gaggtctctt ggcaatgtct aagttgcctg ccactagatg ttgcatctgt ttgataggca  
 4981 gttgcttaca tattattcta ttcattgatta ataagaatcc cctaagtctg cacaatgtaa  
 5041 taggaagctt gttaaattct ataactgtat tcatatcrtt tttgttttgt tactaagagc  
 5101 caactagatt tacacaaagc tgaacactat caacactatc ggaccacaca aatgcatcac  
 5161 tgccatcaac gttctccacc aacagtgttt agaataattt catttccccg tgtttctgtc  
 5221 ggctcttctg camggctttg attctcttta tgggtttgtc tgcrtaacaca gaggttaggg  
 5281 gattccctga tgaattatgg gcattgtatg aacatacatt taattattac cctactgtct  
 5341 gtaggtctaa ttctagtgtt tctgtcccca attctgggaa aaawaattct gctcaaatta  
 5401 tgtcacacaa ttactattgc ttgttacaat tttcagttga tgtgaagctc atccaaattc  
 5461 cgtgrgagtg tggttcatca cctcaggagc tggcttactt gtgtactgat aagtttagtc  
 5521 tatgcctatt tcagatgtct gagcacattt aaggaatgcc cagtgtgtta atcataggga  
 5581 atccatactt ttcctataag cctacttatt ttttatgaac actaagattc aaaggtaata  
 5641 catttgagta aaaggggtgg attctaccta ctttaggcaa aaatgataca aaataatttt  
 5701 ttgacaaaat ttgaaaggac attcaatctt tcggcttgaa taaactacaa gagaggtgaa  
 5761 acacaagctg aagattgact ctggtagggt gttggatgga gagkcctggc agtgagggtta  
 5821 gtcataagct ggaccagagc ctcacatgag gcacagcact gcaaagtcac ccagtgtctg  
 5881 tggataccca gtataactga atamatagta acatctccca tgggtttgtc taatctctgt  
 5941 caggttcagt tcccagcgcc cacatggcaa cccacaacca tcttcagctt cagttccagg  
 6001 gtatgcagtg ccaccttytg acctccrtgg rcaatagaca cacaattggt acacaaacat  
 6061 atgtgcaggc acagcaacca tatatgtcag cttcagttcc agggatgca gtgccacctt  
 6121 ytgcactccr tggrrcaatag acacac

L3 ANSWER 23 OF 24 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on  
 STN  
 AN 2005:640444 SCISEARCH  
 GA The Genuine Article (R) Number: 911CZ  
 TI Genetic and biochemical analyses of the **Ush2A** protein (**usherin**)  
 AU Liu X (Reprint); Bulgakov O V; Pawlyk B; Adamian M; Li T  
 SO INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE, (2005) Vol. 46, Supp. [S].  
 MA 5190.  
 ISSN: 0146-0404.  
 PB ASSOC RESEARCH VISION OPHTHALMOLOGY INC, 12300 TWINBROOK PARKWAY,  
 ROCKVILLE, MD 20852-1606 USA.  
 DT Conference; Journal  
 LA English  
 REC Reference Count: 0  
 ED Entered STN: 29 Jun 2005  
 Last Updated on STN: 29 Jun 2005

L3 ANSWER 24 OF 24 TOXCENTER COPYRIGHT 2005 ACS on STN  
AN 2002:270753 TOXCENTER  
CP Copyright 2005 ACS  
DN CA13724350607B  
TI Mutations in myosin VIIA (MYO7a) and **usherin (USH2a)**  
in Spanish patients with Usher syndrome types I and II, respectively  
AU Najera, Carmen; Beneyto, Magdalena; Blanca, Jose; Aller, Elena;  
Fontcuberta, Ana; Millan, Jose Maria; Ayuso, Carmen  
CS Departamento de Genetica. Facultad de Ciencias Biologicas. Universidad de  
Valencia, Valencia, 46100, Spain.  
SO Human Mutation, (2002) Vol. 20, No. 1, pp. 513/1-513/7.  
CODEN: HUMUE3. ISSN: 1059-7794.  
CY SPAIN  
DT Journal  
FS CAPLUS  
OS CAPLUS 2002:576854  
LA English  
ED Entered STN: 20021126  
Last Updated on STN: 20050215

=> s usherin and express?

24 FILES SEARCHED...

29 FILES SEARCHED...

52 FILES SEARCHED...

L1 26 USHERIN AND EXPRESS?

=> dup rem

ENTER L# LIST OR (END):11

DUPLICATE IS NOT AVAILABLE IN 'ADISINSIGHT, ADISNEWS, BIOCOMMERCE, DGENE,  
DRUGMONOG2, FEDRIP, FOREGE, GENBANK, IMSPRODUCT, IMSRESEARCH, KOSMET,  
NUTRACEUT, PCTGEN, PHAR, PHARMAML, PROUSDDR, PS, RDISCLOSURE, SYNTHLINE'.  
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE

PROCESSING COMPLETED FOR L1

L2 11 DUP REM L1 (15 DUPLICATES REMOVED)

=> d 12 1-11 ibib abs

NO VALID FORMATS ENTERED FOR FILE 'GENBANK'

In a multifile environment, each file must have at least one valid  
format requested. Refer to file specific help messages or the  
STNGUIDE file for information on formats available in individual  
files.

REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):filedefault

L2 ANSWER 1 OF 11 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN  
DUPLICATE 1

AN 2004-23454 BIOTECHDS

TI Selectively transducing retinal pigment epithelium (RPE) cells using a  
vector particle exhibiting an AAV-4 capsid protein, useful for  
preventing, treating or alleviating an eye disease in a mammal;  
adeno-associated virus vector-mediated gene transfer and  
**expression** in host cell for eye disease gene therapy

AU ROLLING F; WEBER M

PA UNIV NANTES

PI WO 2004084951 7 Oct 2004

AI WO 2004-EP4020 26 Mar 2004

PRAI US 2003-400531 28 Mar 2003; US 2003-400531 28 Mar 2003

DT Patent

LA English

OS WPI: 2004-710276 [69]

L2 ANSWER 2 OF 11 IFIPAT COPYRIGHT 2005 IFI on STN DUPLICATE 2

AN 10701606 IFIPAT;IFIUDB;IFICDB

TI METHOD AND VECTORS FOR SELECTIVELY TRANSDUCING RETINAL PIGMENT EPITHELIUM

CELLS  
IN Rolling Fabienne (FR); Weber Michel (FR)  
PA Unassigned Or Assigned To Individual (68000)  
PI US 2004208847 A1 20041021  
AI US 2003-400531 20030328  
FI US 2004208847 20041021  
DT Utility; Patent Application - First Publication  
FS CHEMICAL  
APPLICATION

CLMN 22

GI 5 Figure(s).

FIG. 1. Rat model: Rats were injected with rAAV-2/4. CMV.gfp and analyzed 30 days post injection (p.i.). Fluorescent retinal imaging (A).

Sclera/choroid/RPE (B) and neuroretina (C) flatmounts. Sections from sclera/choroid/RPE (D) and neuroretina (E) examined under an inverted fluorescence microscope. RPE: retinal pigmented epithelium; ONL: outer nuclear layer; INL: inner nuclear layer; GCL: ganglion cell layer.

FIG. 2. Nonhuman primate model: Live fluorescent retinal imaging at different time intervals (14, 21, 35, and 60 days p.i.) in Mac1 and Mac2. Both individuals received rAAV-2/4. CMV.gfp. (\*) retinal detachment created by the subretinal injection.

FIG. 3. Nonhuman primate model: Two months p.i., neuroretina (A, B and D) and choroid/RPE (C) flatmounts were performed and examined under inverted fluorescence microscope. M, macula; ONH, optical nerve head, RV, retinal vessel.

FIG. 4. Nonhuman primate model: Sections from neuroretina (A, B) and choroid/RPE (C, D) flatmounts and were either analyzed by normal light microscope (A, C) or inverted fluorescence microscope (B, D). See legend FIG. 1 for RPE, ONL, INL and GCL.

FIG. 5. Vector shedding after subretinal delivery of rAAV-2/4. CMV.gfp in nonhuman primate (Mac1). PCR assay for sensitivity (A). Serum (s), lacrymal (l) and nasal (n) samples are represented (B). DNA marker (M), positive control on 25 pg of vector plasmid (+), negative control on water (-). Samples were collected 15 min, 2 hr and from day 1 to 28 p.i.

L2 ANSWER 3 OF 11 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation on STN

AN 2004:662568 SCISEARCH

GA The Genuine Article (R) Number: 837QT

TI Immunohistochemistry and reverse transcriptase-polymerase chain reaction as methods for diagnostic determination of Usher syndrome type IIa

AU Cohn E; Bhattacharya G; Pearsall N; Shendrik I; Kimberling W; Cosgrove D (Reprint)

CS Boys Town Natl Res Hosp, Usher Syndrome Ctr, 555 N 30th St, Omaha, NE 68131 USA (Reprint); Boys Town Natl Res Hosp, Usher Syndrome Ctr, Omaha, NE 68131 USA; Creighton Univ, Sch Med, Dept Pathol, Omaha, NE USA  
Cosgrove@boystown.org

CYA USA

SO LARYNGOSCOPE, (JUL 2004) Vol. 114, No. 7, pp. 1310-1314.  
ISSN: 0023-852X.

PB LIPPINCOTT WILLIAMS & WILKINS, 530 WALNUT ST, PHILADELPHIA, PA 19106-3621 USA.

DT Article; Journal

LA English

REC Reference Count: 14

ED Entered STN: 13 Aug 2004

Last Updated on STN: 13 Aug 2004

\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*

L2 ANSWER 4 OF 11 IFIPAT COPYRIGHT 2005 IFI on STN DUPLICATE 3

AN 10154875 IFIPAT;IFIUDB;IFICDB

TI IMMUNODIAGNOSTIC DETERMINATION OF USHER SYNDROME TYPE IIA; DIAGNOSING PREFERENTIAL GENETIC DISORDER IN HUMANS; OBTAIN SAMPLE, INCUBATE WITH

ANTIBODY, DETECT BOUND ANTIBODY, COMPARE TO CONTROL, EVALUATE PATTERN FOR  
GENETIC DISORDER.

IN Cosgrove Dominic E

PA Boys Town National Research Hospital (63491)

PI US 2002098516 A1 20020725

AI US 2001-970318 20011003

PRAI US 2000-237834P 20001003 (Provisional)

FI US 2002098516 20020725

DT Utility; Patent Application - First Publication

FS CHEMICAL  
APPLICATION

OS CA 137:89726

CLMN 41

GI 9 Figure(s).

FIG. 1 illustrates the major structural elements of the **usherin** protein based on amino acid sequence. The amino acid positions where domains start and end are indicated. The location of polypeptides used to derive antibodies 1 (SEQ ID NO:1) and 2 (SEQ ID NO:2) used in these studies are shown. Constructs used to generate fusion peptides comprised the indicated portions of the LN, LE, and fibronectin type III domains (LN-FP, LE-FP, and FN-FP, respectively).

FIG. 2 is a Western blot of immunoprecipitated protein from extracts of retina and cochlea. For both gels: lane 1 is retinal extract; lane 2 is retinal extract immunoprecipitated with pre-immune serum; lane 3 is cochlear extract; lane 4 is cochlear extract precipitated with pre-immune serum. For the gel on the left, lanes 1 and 3 were immunoprecipitated with antibody 2 and blot probed with antibody 1. For the gel in the right, lane 1 and 3 were immunoprecipitated with antibody 1 and the blot was probed with antibody 2.

FIG. 3 is commercially available PolyA+ RNA dot blot from various mouse tissues. The blot was hybridized to a cDNA fragment corresponding to the LN domain of the protein. The template on the right indicates the tissues from which the corresponding RNA spot on the left was prepared.

FIG. 4 is an immunoperoxidase detection of tissues where **usherin** is **expressed**. A survey for **usherin expression** was conducted on mouse tissues. This figure summarizes where **usherin** was **expressed**. Serial sections were stained with hematoxylin and eosin (H&E) to illustrate tissue architecture, or with antiusherin (left panels), or anti-collagen alpha 1 (IV), which specifically localizes to the basement membranes. Arrows indicate **usherin** in the capillary basement membranes of the epididymus (D) and the spleen (J). Epidid=epididymus; Submax=submaxillary gland; Sm int=small intestine.

FIG. 5 is an immunoperoxidase detection of tissues where **usherin** is not **expressed**. Serial section were stained with hematoxylin and eosin (H&E) to illustrate tissue architecture, or with antiusherin (left panels), or anti-collagen alpha 1 (IV), which specifically localizes to the basement membranes. Sk musc=skeletal muscle; Sm musc=smooth muscle. Magnification bars are 50 mu m.

FIG. 6 is an **expression** of **usherin** in the inner ear and the eye of the mouse, and in the human retina. Mid-modiolar cross sections of the adult (8 wks) cochlea (A, B, C), or post-natal day 0 cochlea (G, H, I), or cross sections of adult retina (D, E, F) were immunostained with anti-**usherin** antibodies (A, D, G) or anti-type IV collagen antibodies (C, F, E). Eosin and hematoxylin stained serial sections are illustrated to provide a cellular frame of reference (B, E, H). Arrows in A and C denote the strial capillary basement membranes, and arrows in D, E, and F denote immunostaining in the basement membranes in Bruch's layer of the retina. Panel J shows **expression** of the **usherin** protein in the Bruch's layer and the choroid capillaries in human retina. Human retina was immunostained using the anti-**usherin** (raised against the mouse protein) antibody. Arrow heads indicate linear immunostaining in the

basement membranes on either limiting side of the Bruch's layer (BL). RPE=retinal pigment epithelial side; CL=choroid layer. Magnification bars are 50  $\mu$ m.

FIG. 7 is an immunogold localization of **usherin** to the basement membranes in strial capillaries, and the basement membrane in Bruch's layer of the retina. Arrows indicate immunogold particle deposition in the strial capillary basement membranes (A) and the basement membranes of the Bruch's layer (B) establishing **usherin** as a basement membrane protein. Note the proximity of the type I collagen fibrils with the basement membrane in B. CL=capillary lumen; MC=marginal cell; IPM=interphotoreceptor cell matrix; BL=Bruch's layer. Magnification bars are 50  $\mu$ m.

FIG. 8 is a Western blot illustrating the direct interaction of **usherin** with type IV collagen and the indirect interaction of **usherin** with type I collagen. The LE domain of **usherin** interacts with type IV collagen (panels A and B). Extracts of matrix from the indicated mouse tissues were (A) reacted with the fusion peptide comprising the LE-domain, immunoprecipitated with anti-GST antibodies, and the immunoprecipitate western blotted using anti-type IV collagen antibodies, or (B) directly immunoprecipitated with anti-type IV collagen antibodies and the immunoprecipitate western blotted using anti-**usherin** antibodies. The molecular weight markers are given in kilodaltons. The LN domain of **usherin** interacts with type I collagen (panel C). Extracts from the indicated tissues were reacted with the fusion peptide comprising the LN domain and immunoprecipitated with anti-GST antibodies. The immunoprecipitate was analyzed by western blot and probed with antibodies specific for type I collagen.

FIG. 9 is a Western blot illustrating the interaction of **usherin** with itself, possibly forming a suprastructural network integrated into the basement membrane architecture. In panel A, the indicated fusion peptides were mixed with protein extracts from the eye, after removal of the lens lanes 1, 3, 4, 6, 7, and 9 or the liver (lanes 2, 5, and 8) or with pre-immune serum (lanes 3, 6, and 9). The immunoprecipitate was analyzed by western blot probed with anti-**usherin** antibodies. Only the LN domain was capable of immunoprecipitating **usherin** from retinal extracts (lane 1). In panel B, purified fusion peptides were mixed in various combinations and crosslinked using dimethyl sublimidate (crosslinked mixtures are followed by an "X"). Products were resolved by PAGE, and stained with Coomassie blue. Arrows denote dimeric and trimeric crosslinked product.

L2 ANSWER 5 OF 11 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
DUPLICATE 4

AN 2003:28147 BIOSIS

DN PREV200300028147

TI **Usherin expression** is highly conserved in mouse and human tissues.

AU Pearsall, Nicole [Reprint Author]; Bhattacharya, Gautam; Wisecarver, Jim; Adams, Joe; Cosgrove, Dominic; Kimberling, William

CS Boys Town National Research Hospital, 555 No. 30th St., Omaha, NE, USA  
kimber@boystown.org

SO Hearing Research, (December 2002) Vol. 174, No. 1-2, pp. 55-63. print.  
ISSN: 0378-5955 (ISSN print).

DT Article

LA English

ED Entered STN: 1 Jan 2003

Last Updated on STN: 1 Jan 2003

L2 ANSWER 6 OF 11 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
DUPLICATE 5

AN 2002:149106 BIOSIS

DN PREV200200149106

TI Localization and **expression** of **usherin**: A novel

basement membrane protein defective in people with Usher's syndrome type IIa.

AU Bhattacharya, Gautam; Miller, Caroline; Kimberling, William J.; Jablonski, Monica M.; Cosgrove, Dominic [Reprint author]

CS Boys Town National Research Hospital, 555 No. 30th St., Omaha, NE, USA  
cosgrove@boystown.org

SO Hearing Research, (January, 2002) Vol. 163, No. 1-2, pp. 1-11. print.  
CODEN: HERED3. ISSN: 0378-5955.

DT Article

LA English

ED Entered STN: 14 Feb 2002  
Last Updated on STN: 26 Feb 2002

L2 ANSWER 7 OF 11 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
DUPLICATE 6

AN 2001:351842 BIOSIS

DN PREV200100351842

TI **Expression**, distribution, and integration of **usherin**:  
A novel basement membrane protein defective in people with Usher syndrome type IIa.

AU Cosgrove, D. E. [Reprint author]; Bhattacharia, G. [Reprint author]; Kalluri, R.; Kimberling, W. J. [Reprint author]; Jablonski, M. M.

CS Genetics, Boys Town Nat'l Research Hosp, Omaha, NE, USA

SO IOVS, (March 15, 2001) Vol. 42, No. 4, pp. S654. print.  
Meeting Info.: Annual Meeting of the Association for Research in Vision and Ophthalmology. Fort Lauderdale, Florida, USA. April 29-May 04, 2001. Association for Research in Vision and Ophthalmology.

DT Conference; (Meeting)  
Conference; Abstract; (Meeting Abstract)

LA English

ED Entered STN: 25 Jul 2001  
Last Updated on STN: 19 Feb 2002

L2 ANSWER 8 OF 11 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

AN 2002:23328 BIOSIS

DN PREV200200023328

TI Distribution of **usherin** in humans and its effects on reproduction in people with usher syndrome type II.

AU Pearsall, N. A. [Reprint author]; Bhattacharya, G. [Reprint author]; Cosgrove, D. [Reprint author]; Wisecarver, J. L.; Kimberling, W. J. [Reprint author]

CS Genetics Department, Boys Town National Research Hospital, Omaha, NE, USA

SO American Journal of Human Genetics, (October, 2001) Vol. 69, No. 4 Supplement, pp. 651. print.  
Meeting Info.: 51st Annual Meeting of the American Society of Human Genetics. San Diego, California, USA. October 12-16, 2001.  
CODEN: AJHGAG. ISSN: 0002-9297.

DT Conference; (Meeting)  
Conference; Abstract; (Meeting Abstract)  
Conference; (Meeting Poster)

LA English

ED Entered STN: 26 Dec 2001  
Last Updated on STN: 25 Feb 2002

L2 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:790655 CAPLUS

DN 133:345575

TI Secretory **expression** systems for microorganisms using periplasmic chaperones and secretins of Gram-negative bacteria

IN Korpela, Timo; MacIntyre-Ayane, Sheila; Zavialov, Anton Vladimirovich; Battchikova, Natalia Vsevolodovna; Petrovskaya, Lada Evgenievna; Korobko, Vyacheslav Grigorievich; Zav'yalov, Vladimir Petrovich

PA Finland

SO PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000066756	A1	20001109	WO 2000-FI387	20000503
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	FI 9901014	A	20001105	FI 1999-1014	19990504
	FI 109361	B1	20020715		
	CA 2370436	AA	20001109	CA 2000-2370436	20000503
	EP 1173592	A1	20020123	EP 2000-922689	20000503
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	NZ 515483	A	20030926	NZ 2000-515483	20000503
	AU 777246	B2	20041007	AU 2000-43003	20000503
	AU 2000043003	A5	20001117		
	ZA 2001009231	A	20021108	ZA 2001-9231	20011108
PRAI	FI 1999-1014	A	19990504		
	WO 2000-FI387	W	20000503		

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 10 OF 11 FEDRIP COPYRIGHT 2005 NTIS on STN

AN 2005:177436 FEDRIP

NR CRISP 5R01DC004844-03

TI **USHERIN: STRUCTURAL AND FUNCTIONAL ANALYSIS**

SF Principal Investigator: COSGROVE, DOMINIC E; COSGROVE@BOYSTOWN.ORG, FATHER FLANAGAN'S BOYS' HOME, 555 NORTH 30TH STREET, OMAHA, NE 68131

CSP FATHER FLANAGAN'S BOYS' HOME, BOYS TOWN, NEBRASKA

CSS Supported By: NATIONAL INSTITUTE ON DEAFNESS AND OTHER COMMUNICATION DISORDERS

DB 2009 (/01/02)

FYR 2004

DE 2008 (/31/07)

FU Noncompeting Continuation (Type 5)

FS National Institutes of Health

L2 ANSWER 11 OF 11 GENBANK® COPYRIGHT 2005 on STN

LOCUS (LOC): CA757424 GenBank (R)

GenBank ACC. NO. (GBN): CA757424

GenBank VERSION (VER): CA757424.1 GI:25801463

CAS REGISTRY NO. (RN): 550046-88-3

SEQUENCE LENGTH (SQL): 255

MOLECULE TYPE (CI): mRNA; linear

DIVISION CODE (CI): **Expressed sequence tag**

DATE (DATE): 27 Nov 2002

DEFINITION (DEF): OD105G02\_T3.CRO OD Oryza sativa cDNA clone  
OD105G02\_T3.CRO similar to **usherin** [Rattus norvegicus], mRNA sequence.

KEYWORDS (ST): EST

SOURCE: Oryza sativa

ORGANISM (ORGN): Oryza sativa

Eukaryota; Viridiplantae; Streptophyta; Embryophyta;  
Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida;  
Poales; Poaceae; Ehrhartoideae; Oryzeae; Oryza

NUCLEIC ACID COUNT (NA): 75 a 52 c 62 g 66 t

COMMENT:

Contact: Mark Fredricksen  
Department of Plant Biology  
University of Illinois  
1201 W. Gregory Dr., Urbana, IL 61801, USA  
Tel: 2172655473  
Email: bohnertlab@life.uiuc.edu.

REFERENCE: 1 (bases 1 to 255)

AUTHOR (AU): Bohnert,H.J.; Borchert,C.; Brazille,S.; Brooks,J.;  
Eaton,M.; Ferrea,H. ; Kawasaki,S.; McCollough,A.;  
Michalowski,C.B.; Palacio,C.; Scara,G.; Wheeler,M.;  
Zepeda,G.R.

TITLE (TI): Functional Genomics of Plant Stress Tolerance

JOURNAL (SO): Unpublished (2000)

FEATURES (FEAT):

Feature Key	Location	Qualifier
source	1..255	/organism="Oryza sativa" /strain="Pokkali" /db-xref="taxon:4530" /clone="OD105G02-T3.CRO" /clone-lib="OD" /tissue-type="roots" /dev-stage="1 week" /note="1 d 150mM NaCl"

SEQUENCE (SEQ):

1 ttcacactga gtagcacaat gggctcctgga tttcctgtaa ccataccatc gctatccgcg  
61 gcagctgatac attataacaa tagcaagggtg caagccagct aacgaaatat aatcaagtta  
121 aacgaacctt tttgcactag tgaacacagc cggcttgcaa gttgtggatg gtttggtgat  
181 gaagcataga ggccgaccgc agtgagatga atggctgttt ttgacactgg gttaatgatt  
241 gtggacaaaa acctt

=>